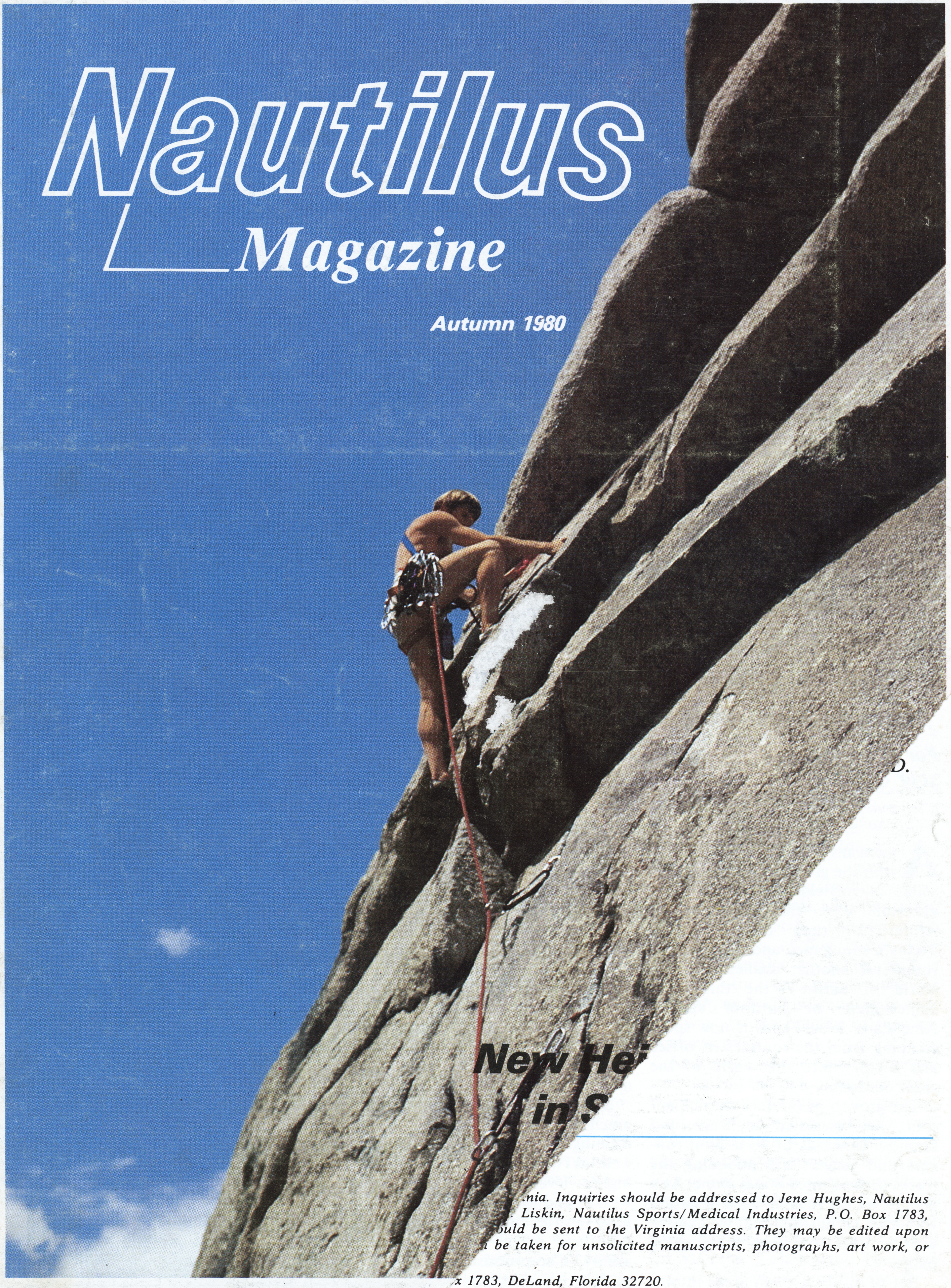
Nautilus Magazine

Autumn 1980



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nia. Inquiries should be addressed to Jene Hughes, Nautilus
Liskin, Nautilus Sports/Medical Industries, P.O. Box 1783,
uld be sent to the Virginia address. They may be edited upon
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x 1783, DeLand, Florida 32720.

. . . to our readers

On occasion, I scan (or even read) magazines. Things from ladies journals to outdoorsy slicks seem to trap me, wallet in hand, at least once monthly. Of particular interest, of course, are the salutations from editors of these periodicals.

One fellow patiently described how he related successfully with his art director and my eyes greened with envy. Another discussed the theory of "filling up the white spaces" as he proceeded to pat all of his photographers and new writers on the back for their exciting work. Of course I shared the excitement with him and decided to add my own bulk to the anals of editorial fluff by filling these white spaces with "the article that won't be." (Not now, at least.)

I was visiting with a physician acquaintance of mine the other day during lunch hour and another acquaintance of the good doctor's walked in, clutching his shoulder. Before the poor chap could finish saying "My shoulder hurts," the physician had said, "Lose twenty pounds and quit smoking." The case was dismissed.

To me there was nothing surprising about the incident. Words similar to those are uttered too often to count. But carrying the matter a little farther I began to see a good story for Nautilus Magazine: The Cost of Staying Fit. My intention was to compare the relatively low cost of fitness club membership to the cost of even three days in the hospital. Here's what happened.

No one in the insurance industry could say anything about hospital stays being related to any physical deficiency that could be improved by exercise or proper nutrition, with the possible exception of obesity. Over fat is sometimes *a cause to raise the risk rating for life insurance.*

What did I hear? Mainly, Silence. Those in authority won't talk.

I was amazed, having assumed for a couple of decades that exercise would keep you fit and out of the hospital. The purpose of this writing is that I still believe that and may someday be able to assemble the research and put it on paper as fact. In the meantime, what seems to have happened is this: The scientists are at it again and you can get a grant to prove that fitness is irrevelant to good health as easily as you can to prove the opposite. At least, there is enough of that going on that insurance representatives won't take much of a stand. Whatever the reasons are for the piece being tricky to research from my end, here is the outline and I would be interested to see what turns up if anyone cares to write the story for me.

All of the costs for even an elaborate fitness program could be itemized easily: Club member-
, warm-up outfits fit for the Ritz, shoes so you can wear a different pair daily, sports equipment
highest caliber, the most nourishing of foods, and so on.
w look at costs at your local hospital. Here they are averaging $140 or more per day.
it shouldn't be too hard to get standard fees that insurance companies will pay to a physi-
rious operations or treatments.
ky part is the linkage . . . find some "facts and figures" to prove that being in poor
your risks. Or do as I do. Take it for granted that your family doctor knows what he's
n he tells you to get in shape and stay in shape. Fitness isn't expensive, even if you
th to a 90-minute Nautilus workout each week.

Yours truly,

Jene Hughes

Jene Hughes
Editor

Nautilus Magazine

COMPLIMENTARY PASS

For a free introductory workout, present this pass at the fitness facility whose name appears on the mailing label of this magazine. Nautilus: TOTAL CONDITION through FULL RANGE EXERCISE.

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Chairman of the Board
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Executive Vice President
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General Manager

Editor
Jene Hughes

Art Director
Billie Durham

Editorial Assistant
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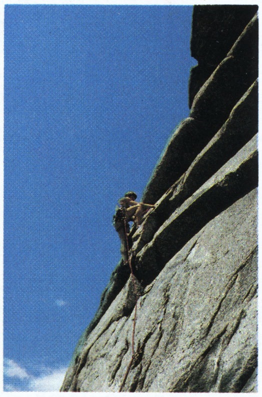
David Wills



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Special Feature

1980 Nautilus Showcase
of
New Machines

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Conditioning for Cycling

by John Donati

For competitive riding or weekend recreation, proper strength training will enhance, not harm, your cycling . . .

Americans have fallen back in love with the great outdoors. It is an affair of unyielding passion. Their ancestors were challenged by the wilderness, then conquered it. Today's young men and women have found yet another challenge in the world of nature — the thrill and achievement of outdoor sports. Americans' leisure time is now spent escaping from the routines of office and factory into the world of the great outdoors.

The growth of outdoor participant sport has escalated in leaps and bounds. Upwards of 30 million runners and joggers are pounding the tracks in the United States alone. As a people, we are rushing back to nature with such enthusiasm that we have to wait in line to get on the jogging paths.

But of all the growth areas in outdoor sports, none is enjoying a greater surge than bicycling. Bicycling as a sport, a family recreation, and a serious means of transportation is becoming almost as popular in the United States as it is in Europe.

A vigorous, endurance-oriented sport, bicycling is a perfect combination of fitness activity and challenging sport that makes the bicyclist a part of the beauty and majesty of nature.

Because of bicycling's popularity, much interest has arisen concerning training techniques for competitive as well as weekend bicyclists. At the higher levels of competition, the weaker and lower skilled athletes will have been eliminated and the athlete has three means of improving his ability. Compromising any of these three will produce an athlete who is far short of his full potential.

The athlete should (1) practice the skills needed, (2) learn effective strategies, and (3) improve his physical efficiency. The athlete's physical efficiency is primarily dependent upon his cardiovascular fitness and level of strength.

In a sense, cardiovascular fitness is linked very closely to skill training. Many times, through the practice needed to develop the specific skill, sufficient cardiovascular fitness is obtained automatically. Additionally, most athletes also practice some form of training that is intended only for the purpose of increasing cardiovascular fitness. So in most sports like bicycling, cardiovascular fitness is given the degree of attention that it deserves.

Individuals vary, but a particular

Continued

individual will reach his own limit of functional ability only when all of the improvable factors are bettered as much as possible. Additional improvement is impossible only when skill, cardiovascular fitness, and strength have all been raised to the highest possible level consistent with the requirements of a particular sport.

Yet, in the bicycling world, there exists a situation where thousands of cyclists are doing little or nothing in the way of improving strength, usually because they are afraid to increase strength, afraid they will reduce their speed of movement, range of movement, flexibility, or in some other way limit their functional ability. All of these factors are utterly without foundation and are based on false beliefs.

Stronger muscles will make you faster, not slower. Proper strength training will actually increase your flexibility in any area of movement. Greater strength will improve your functional ability in any activity related to sports. And, greater muscular strength will go a long way in the direction of preventing injuries.

All of these factors are important, and a champion in any sport is usually superior in every aspect except one — his strength is seldom what it could be, almost never as high as it should be, and his performance is thus less than it might be.

A cyclist will build a certain amount of strength from riding a bike, but he will never build the degree of strength that is necessary to reach his maximum potential. Without exception, a more highly conditioned athlete is a better athlete. Not every individual has the genetic potential to be a world class competitor, but every athlete, even a weekend enthusiast, owes it to himself to develop maximum potential. An important aspect of the developmental process must be a properly conducted strength training program.

A properly conducted strength training program should be constructed around "seven basic variables." They are: What exercises should be performed, the order they should be performed in, the number of repetitions, the amount of weight that should be used, the number of sets to be performed, the amount of rest between exercises, and the number of workouts per week.

The following review of the overall Nautilus training concept should prove helpful.

Exercises To Be Performed

One exercise for each major muscle group of the body should be considered. The specific exercises to be performed will depend upon the equipment available to the individual. The total number of exercises for the major muscle groups should not exceed ten to twelve: four to six lower body, six to eight upper body.

Order of Exercise

Workouts should begin with the largest muscle groups and proceed down to the smallest. Proceed from the muscles of the legs to the torso, arms, abdominals, and finish with the neck. This is done for two reasons. One, working the largest muscles first causes the greatest degree of overall body stimulation. Two, it is impossible to reach the required condition of momentary muscular exhaustion in a large muscle if the smaller muscle groups that serve as a link between the resistance and the large muscle groups have been previously exhausted. Therefore, it is important to work the largest muscles first, while the system is still capable of working with the desired intensity.

How Many Repetitions

Experience has shown that at least eight repetitions should be performed and not more than twelve. If the individual can't achieve eight, the resistance is too heavy. If he can perform more than twelve, it's too light. Reject the hypothesis that insinuates "more is better." The goal of any conditioning program should be to develop fitness in an efficient and effective manner, not engage in lengthy workouts merely for the sake of working out.

How Much Weight

Once the correct training techniques have been learned, the individual should select a weight that will cause him to reach the point of momentary muscular failure between eight to twelve repetitions. The point of muscular failure has been reached when the individual can no longer raise the weight in good form through the muscles' full range of movement.

How Many Sets

If each exercise is done using the high intensity principle, with special emphasis on good form, the workouts must be brief. A workout should consist of no more than twelve exercises. Perform only *one* set of each exercise and take no more than 30 minutes to complete the entire workout. One properly performed set (to point of muscular failure) will stimulate maximum gains in muscular strength. If an individual properly performs one set, he will certainly not want to perform a second set. If a second set is performed, it is obvious that the first set was not properly performed.

How Much Rest Between Exercises

Generally, an individual should move from one exercise to the next, allowing as little time as possible between exercises. A reasonable rest period between exercises is twenty to thirty seconds. An individual can develop his level of aerobic fitness right along with his efforts to increase his level of muscular fitness by moving from exercise to exercise as quickly as possible. This method of training places a substantial demand on the cardiovascular system. Consequently, the level of aerobic fitness is improved.

How Many Workouts Per Week

A muscle, when overloaded, needs at least 48 hours to fully recover. If a muscle is not exercised after 96 hours, it will begin to atrophy. Ideally, three workouts a week, that is, every other day, will produce maximum results.

Strength is general, the application of strength is specific. The proper use of strength in cycling comes only from the practice of cycling. Skill is required for the proper use of strength, and skill is produced in only one way, by the practice of the particular activity.

As a result of the fear of strength training and the lack of factual information on the subject of training, most cyclists are overlooking a very important factor, while continuing to operate under the mistaken belief that they are doing everything possible in the direction of improving functional ability. The competitive, healthful edge that cyclists have been looking for has been in plain sight: That edge is a properly conditioned body. ❁

Video Productions

by David Liskin

> ***"As with using Nautilus exercise equipment, a video production is based on the joint efforts of people and machines. . ."***

Behind locked doors, the set is quiet and engineers roll the tape. Red lights glow from atop hot cameras and a video production begins. As the on-camera talent goes through their paces, the director instructs the camera people to get the shots he needs and a short instructional program begins to take shape. This production phase of taping, however, is only a part of the complex process.

Every program begins with an idea, which is evaluated by the producer and his or her staff. It receives a number and the pre-production phase begins with the examination of important parameters: What on-camera talent is necessary? What should the set look like? How many cameras are needed? What about props and special effects?

Another pre-production concern is a marketing evaluation: What is the cost? The target audience? The probable effect of the tape from a financial and instructional point of view?

Once decisions are made, a time schedule is set and the production phase is in operation. The set is erected and lighted. The engineers prepare the complex video equipment while talent goes over scripts and cameramen chart and focus their cameras. Microphones are installed by audio engineers and voice levels are taken from the set. The message of the program is reflected by the director's choice of camera angles.

All of this has happened before the doors are locked and the red lights appear. After takes and retakes, the last words are spoken and the program is ready for post-production. Here edition is completed by people using computerized editing machines. The video productions would be impossible without the joint efforts of people and equipment. Music tracks are laid down, the audio is sweetened, and the open, close, and titles are added, making the production ready for duplication.

During duplication, the master tape is converted to half-inch Beta, VHS, or ¾ inch U-matic form. Labels from the print shop have been designed in-house to make the overall package attractive, and the finished product is shipped to the consumers.

The Nautilus Television Network, now releasing a wide variety of tapes for use by Nautilus clubs and their members, will be the world's largest studio complex when completed.

See page 30 for list of tapes available.

by Ellington Darden, Ph.D.

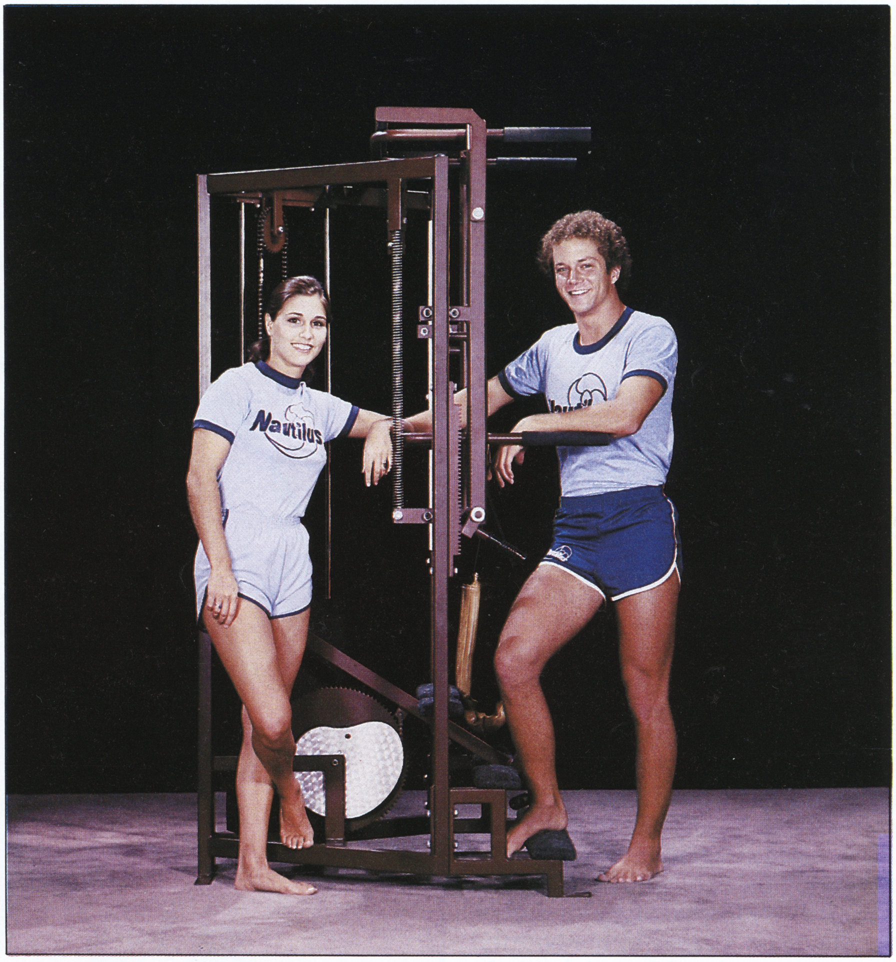
Multi-Exercise Machine: Chins and Dips

In 1972, Arthur Jones was experimenting with negative work. Since chins and dips are two of the most effective exercises for the upper body, these movements were usually included in the workout. By placing a bench in front of the horizontal and parallel bars, he could use his legs to get into the contracted position. Once in the top position, he slowly lowered his bodyweight to the stretched position. The negative part of a chin and dip could be emphasized in this fashion.

Soon he began to add resistance in the form of a dumbbell to a belt attached to his waist. As he progressed in his strength, the dumbbell became increasingly uncomfortable. Furthermore, there was always the possibility of stumbling while stepping onto the bench.

What was needed was a comfortable, safe way to perform negative chins and dips. That night, Arthur Jones sketched an adjustable set of bars with a movable cross bar at the top and a weight stack connected to a movement arm at the bottom.

Later, after the machine was built, tested, modified, and rebuilt, special attachments were added. Besides negative chins and dips, fifteen or more exercises could be performed on this one device. The obvious name for this new Nautilus tool was Multi-Exercise Machine. It is now the most versatile of all the machines manufactured by Nautilus Sports/Medical Industries.



The following exercises can be performed on the Multi-Exercise Machine:

- Chin
- Chin, negative only
- Behind neck chin
- Behind neck chin, negative only
- Parallel dip
- Parallel dip, negative only
- Wrist curl
- Reverse wrist curl
- Side bend
- Deadlift
- Stiff-legged deadlift
- Squat
- Shoulder shrug
- Biceps curl
- Triceps extension with towel
- Calf raise
- Upright row
- Bent-over row
- Hanging leg raise

Dips and chins will be described in this issue of the *Nautilus Magazine.* The next issue will go into detail on how to perform other popular movements on the Multi-Exercise Machine.

Since both chins and dips involve movements around several joints in the upper body, they can be utilized in at least two places in the workout.

The Nautilus Pullover Machine pri-

Continued on page 26

by Dr. M. N. Fulton, M.D.

Shoulder Pain

— Rotator Cuff Syndrome

Question: Why do people over thirty-five frequently experience pain about the front and side of the shoulder after exercising the shoulder area or participating in an activity such an tennis, golf, or racquetball which makes wide rotary demands upon this area? Although proper form is used while exercising and careful supervision is given, this shoulder pain often persists. Can you tell me what is the cause of this pain and what can be done about it?

Answer: This is a question often asked of me. The shoulder pain in the male over thirty-five, particularly a person with little history of any injury or other significant precipitating events, is common. By far the most common cause for this discomfort is *rotator cuff syndrome.*

The rotator cuff is a group of muscles that lies deep to the deltoid muscle and can be thought of as a ''synchronizing'' group of muscles that helps initiate motion about the shoulder and helps control the motions, particularly the abduction or lateral rising of the shoulder. In part, at least, the function is similar to using a small gasoline ''pony'' motor to help start a large diesel engine . . .

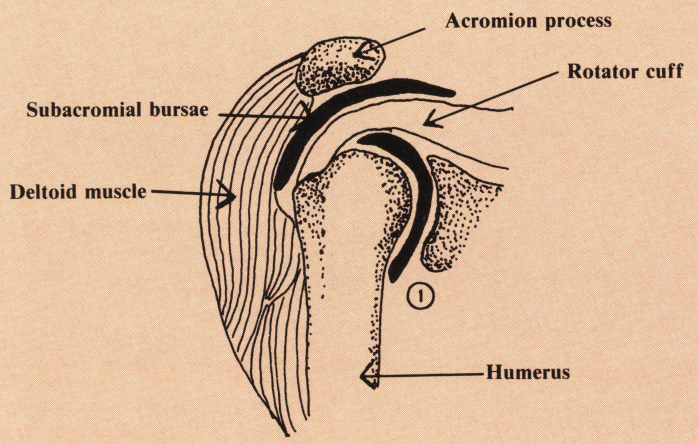
Continued

the rotator cuff helps the deltoid (the prime mover of the shoulder) get started. Then it continues by synchronizing or ''fine tuning'' the movements.

Rotator cuff syndrome is a generalized term which encompasses various abnormalities about the shoulder including tendonitis of the rotator cuff, subacromial bursitis, partial tears of the rotator cuff, or sometimes even full tears of the rotator cuff.

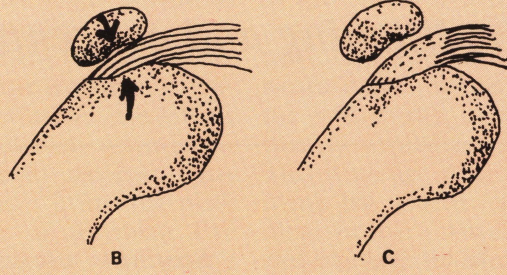
Of these causes, by far the most common is tendonitis involving the supraspinatus muscle. This muscle is one of four muscles that form a common cuff or attachment to the humerus (see figure 1). The primary reason for painful problems in this particular musculo-tendinous attachment is its location between two bony prominences, the head of the humerus and the ''acromion process.'' In this location, almost any motion about the shoulder joint, but particularly abduction, will cause impingement (pinching) of the muscles where they are attached (see figure 2). Generally, a careful history taken from the patient will indicate previous problems with this particular shoulder pain.

figure #1



Anatomy of Shoulder

figure #2



Impingement of Rotator Cuff

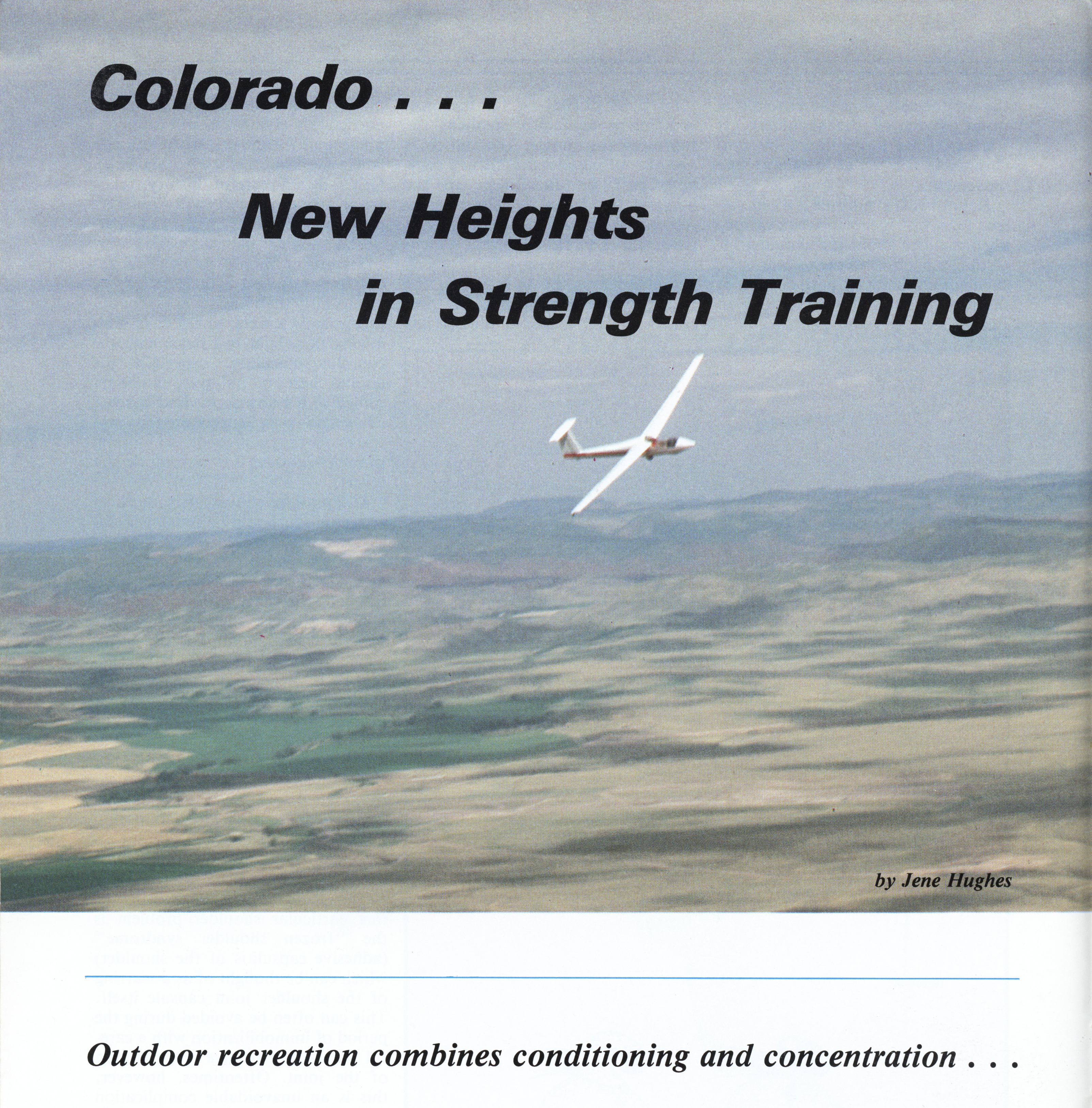
Treatment should initially consist of temporary rest of the extremity, particularly the shoulder area, for approximately a week to ten days. Following this, light resistance with the Nautilus machines, expecially the double chest and pullover, can be resumed with a slow supervised increase of weight over approximately two weeks (with progression to normal shoulder routines if symptoms do not recur).

If symptoms should recur, medical consultation should be sought. Medical treatment will often consist of again rest, and oftentimes immobilization of the shoulder joint, oral anti-inflammatory medications, and frequently physical therapy modalities including the phonophoresis, ultrasound and heat. In particularly resistant cases, steroid injections or surgical intervention may be necessary. It is important that during periods of rest or further therapy the conditioning be continued for the opposite upper extremity as well as the lower extremities. If surgical intervention is performed, a proper rehabilitation course should be outlined with the attending physician and should include Nautilus strengthening.

The most common complication of this particular shoulder problem is the ''frozen shoulder syndrome'' (adhesive capsulitis of the shoulder) which can be thought of as a scarring of the shoulder joint capsule itself. This can often be avoided during the period of immobilization with a careful program of passive range motion of the joint. Oftentimes, however, this is an unavoidable complication and also needs a physician's care.

Editor's Note: Dr. Fulton would be happy to entertain questions regarding aspects of medical musculo-skeletal problems which may occur during your conditioning and rehabilitation of clients and patients. Please forward any questions you might have to Dr. M. N. Fulton, c/o Nautilus Sports/Medical Industries, P. O. Box 1783, Deland, Florida 32720.

Colorado . . .
New Heights in Strength Training



by Jene Hughes

Outdoor recreation combines conditioning and concentration . . .

It isn't as quiet as most people would expect. Even after the line thuds free and the tow plane veers away, there is the steady whoosh of the wind and the muted cabin sound of the controls. From my seat in the glider's front cockpit I can pan the camera 180 degrees as J. D. Murphy, once an Air Force pilot, soars around us at 4,000 feet in his high performance sail plane. Murphy is my host on a two-day *Nautilus Magazine* visit to Colorado and our crammed schedule seems to fit his nature. He tends to arrive places a little early and operate efficiently, eager to see that appointments are successful, always thinking ahead.

Soaring is a logical choice for his pastime; he looks ahead to cloud formations or color patterns on the ground that could mean a thermal, a rising mass of air that can carry the aircraft to altitudes higher than is normal for even airliners. In the winter there is the mountain wave to catch. A stream of air collides with

J. D. Murphy at his family's feed lots.

the mountain and rises until it collides again with an inversion and descends, creating waves like the harmonics of a vibrating string. Temperatures at 25,000 feet can reach −40°. The rate of climb can be as high as 3,000 feet per minute. And there are rotor clouds that can tear the wings from the plane with their intense whirling force.

Like J.D.'s other winter pursuit of wilderness deep powder skiing, soaring itself isn't a dangerous sport. Yet both require intense amounts of concentration. J.D. Murphy (the initials stand for James Daniel, which he insists no one would recognize) describes soaring as "being the most like flying a jet as anything I've flown." He describes the craft's sensitivity as "like balancing on the edge of a razor blade."

Balance is a key word here, because Murphy's life as an entrepreneur in energy-abundant Colorado effects the balance of thousands of other Coloradans' lives. They are members of one of Murphy's three Nautilus clubs, and themselves abound in energy.

Colorado seems to be a Mecca of fitness activity. The portion of the state's economy that is not dominated by energy for technology is dominated by releases for human energy. Outdoor recreation, especially skiing and other pursuits where fitness is either the means or the end, are vital to the economy and pre-occupy the people themselves. The Rocky Mountains, once a source of gold and silver riches, serve now as a backdrop for the new wealth of human activities that is exploding across America. This is an age when the standard of living has placed "leisure time" in most people's vocabulary. Murphy sites the area's "lifestyle" as a main ingredient that has attracted a boom of new industry to his locale.

While leisure may once have implied gout, obesity, and laziness, it is now considered to be an element important to health. "The problem with man," a prominent psychiatrist recently told me, "is that the frontal lobes of the brain tend to be an elaborate device for accessing, adapting, and recalling information." Another way of saying the same thing, he continued, is "Imagine the human being as a creature with incessant chitter-chatter going on in the front of his head. It can't be turned off. The mind is like a Jaguar sports car. It's designed to be run at 90 miles an hour on the highway, not in city traffic. The really healthy person learns to focus on something besides his mind's own buzzing." It is no wonder that people are exploring an increasing variety of demanding individual sports.

It is this creative use of leisure time, the healthy application of the mind to physical goals, that impresses you the most about the lifestyle here.

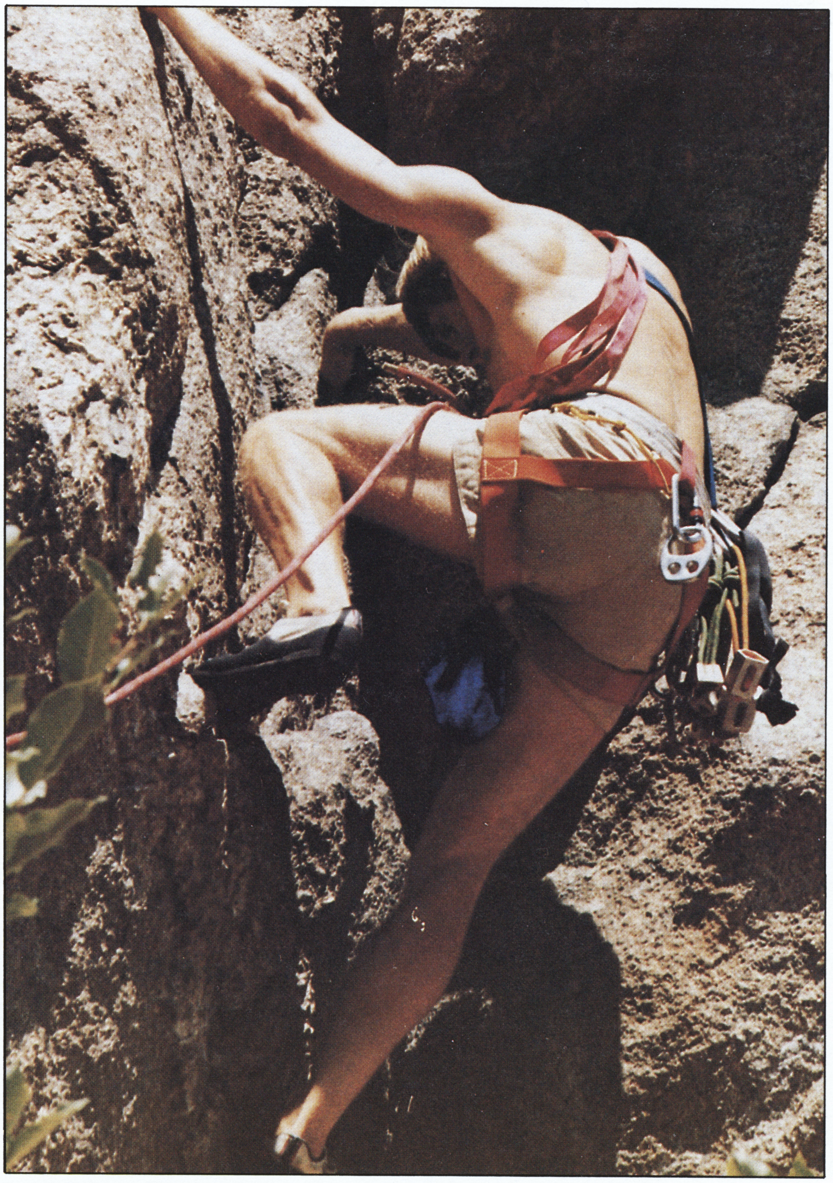
After our morning flight, J.D. and I finished on one other location and headed for the rocks. Our subject and escort was Gary Neptune, who along with his wife Ronnie owns the Neptune Mountaineering Company. Gary

Continued

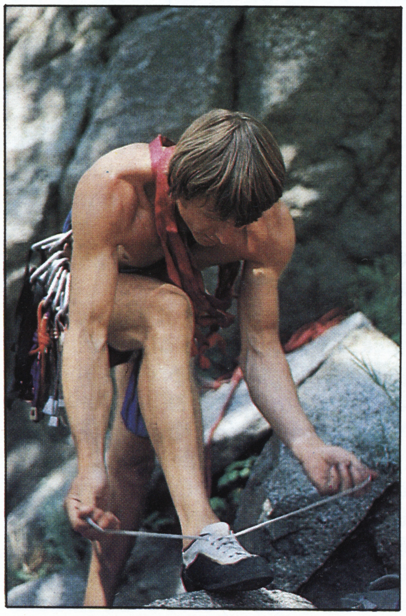
instructs for the Colorado Mountain Club and he and Ronnie had just returned from climbing in Europe. Both are members of Murphy's Nautilus of Boulder and Gary shares with Murphy a similar attitude toward his sport: In itself, climbing isn't dangerous. It is in your approach to it.

Barefoot and clad only in shorts, he scampered out of the car and across a series of drain and water pipes strapped to the side of a cliff. J.D. followed surely, while I eventually caught up with the mini-expedition to gather shots of Gary on the "dome," as the rock is called. It was four-fifths of the way to the summit when we all stopped and Gary put on his shoes to scale the cracked surface, pointing out the use of rope and chockstones or "nuts" to break any fall. "I hate to fall," Neptune commented without the slightest embarrassment. Later, after returning across the pipes to the car, I was confessing what was already obvious: The climb has not been pleasant for me. I had experienced vertigo of a sort both coming and going on the pipes and both times had had to stop and literally force my mind to center on balanced walking. The response? "Let me give you a climbing lesson! It's not good to climb in a panicked condition, the pipes bother a lot of people. It's important to center yourself."

Again, like Murphy's soaring, the skill of the sport is concentration, and one of the most important tools isn't carried in a pack, it's a superbly conditioned body. Murphy's soaring requires overall conditioning that allows him to endure the cramped quarters for hours on end without physical complaints becoming a distraction. Gary's climbing requires carefully applied strength.



Gary Neptune of Boulder demonstrates one of the uses of strength training.



Most members of J.D's Boulder and Fort Collins clubs find outlets for their mental and physical energy. One of J.D.'s fellow "hardcore" trainees is George Betz, who water skied for our lenses for what seemed an incredibly long time for someone forty-four years old. But after we finished, George glanced at his watch and decided to phone his wife and see if she would care to join him for another round or two that evening.

George began serious Nautilus conditioning when the Fort Collins club was first opened in 1976. "The equipment was piled in the middle of the floor and George started right in," recalls Murphy, who classifies the "hardcores" like himself as ones who train away from the more congested peak hours at the sacrifice of working out on weekends or other less convenient times.

Murphy became a Nautilus club owner via a route that is not totally unique, but is nonetheless an interesting display of the determination of these peoples' approach to fitness.

Continued

Twenty years ago, after several years of drought in Missouri, the Murphy family moved to Colorado and began a sheep ranch which has grown to its present size of about 10,000 head. In 1972, J.D. was just out of graduate school at the University of Colorado in Fort Collins with a degree in zoology, which in his case specialized in human physiology. He had finished pilot training, had written his thesis on the dangers of using anabolic steroids, and was an Olympic style lifter. It was at this time that Nautilus founder Arthur Jones was at the university conducting research with Nautilus machines. For Murphy, this exposure was the beginning of a quest that ended only when his first club was opened. From that time, through Water Survival School in Florida to Nuclear Weapons School in Texas, he sought out Nautilus equipment, adament about his training program. Upon leaving the Air Force to rejoin the family farming operation he found himself again without access to the "Time Machines" and, along with his younger brother Harry, decided to purchase equipment for their own use. They gradually added equipment to their order until there was a full line and a half on its way and they decided a small building would be needed. Also, their friends would be able to join them working out.

Unchanged is the original motivation . . . J.D. and Harry still train rigorously. Changed is the fact that what started as a personal goal for them has become a viable part of the family business (J.D. admits, though, that their father — a lifetime farmer — still finds exercise centers a little strange). J.D. can fit in his training while he operates the Fort Collins club, the Nautilus of Boulder club, or the newly opened Healthworks in downtown Boulder. Harry takes afternoons that are too hot for working with the livestock and trains before returning to his farm duties

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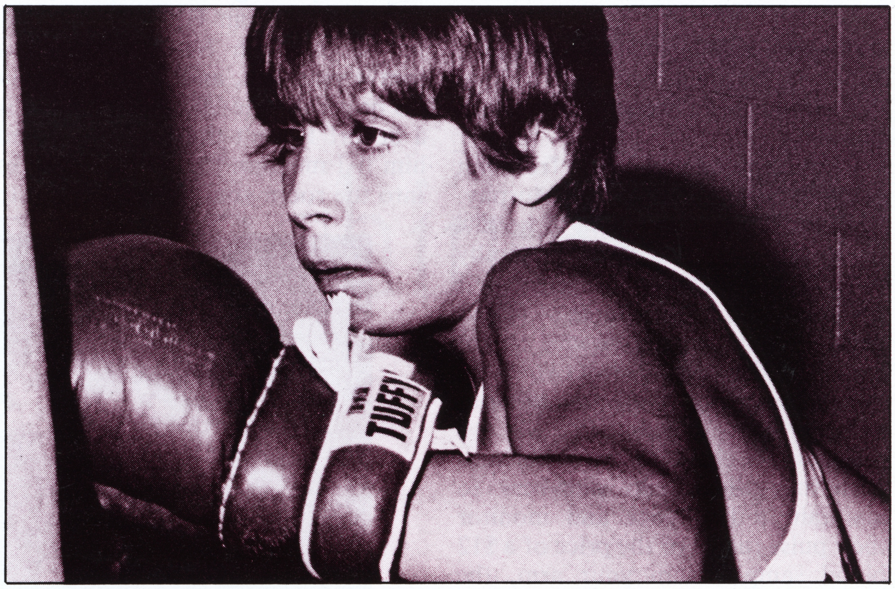
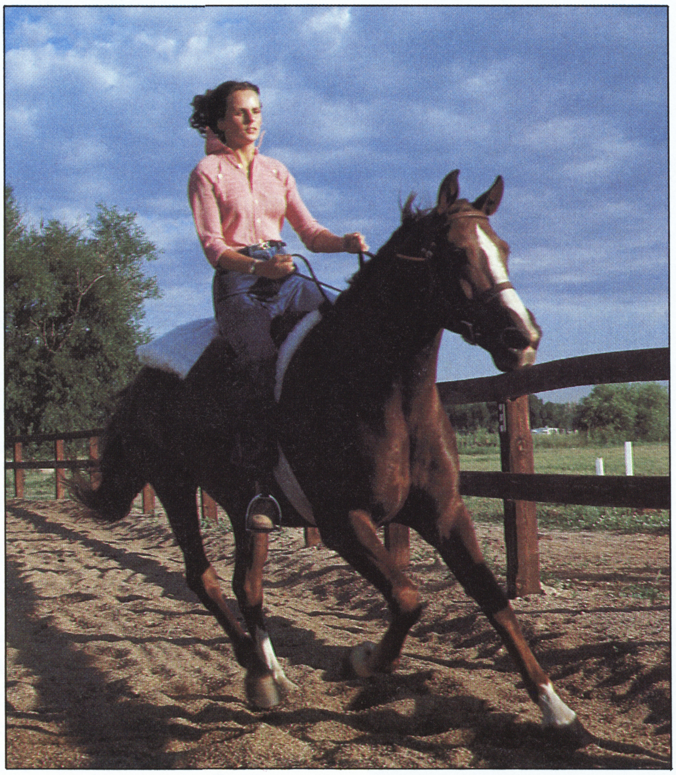
George Betz is also an avid snow skier, averaging usually 35 days in a winter.

Jean Bollman swims in the AAU Master division and trains in Boulder



1980 Colorado Golden Gloves Champion Brian Heltsley.



Jean Comstock of Fort Collins is one of the 90% of Murphy's members who engage in outdoor sports.

when the day cools. He also shares J.D.'s interest in soaring, and the brothers both take helicopters into the British Columbia wilderness each year to spend seven days with a guide skiing some 100,000 vertical feet.

Most members of the three clubs are active in some sort of outdoor recreation (Murphy makes a conservative estimate of 80-90 percent), but everyone is encouraged to train as though they were headed for the deep powder.

''One skier died last year from not being in shape,'' remembers Murphy. ''He fell into a tree well, a hollow place around a tree, and literally didn't have the strength to get himself out. Now they set standards of fitness before people are encouraged to go. You should be able to run two and a half miles and ski all day without rest.''

Inside his clubs, clocks with huge three-foot dials help members to maintain a fast pace and monitor their pulse rate. For the price of a $12 blood sample from your arm, the club will provide you with a coronary risk profile. Like so many other successful club managers, Murphy takes fitness seriously himself, for his members, and as a product.

Other people on our itinerary were riders of bicycles and horses, swimmers and decathlon competitors, motorcross racers, and more rock climbers. Time ran out . . . but not before capturing a few moments and moves with Brian Heltsley, who has just begun with Nautilus. Brian is twelve years old, and figures to be in his prime for the '88 Olympics. He is a boxer! I don't think it will offend him if I mention that when he walks into the room you find yourself with a mild mannered lad who has a serene and pleasant appearance that could fit an aspiring youth in any field, from Little League to violin playing.

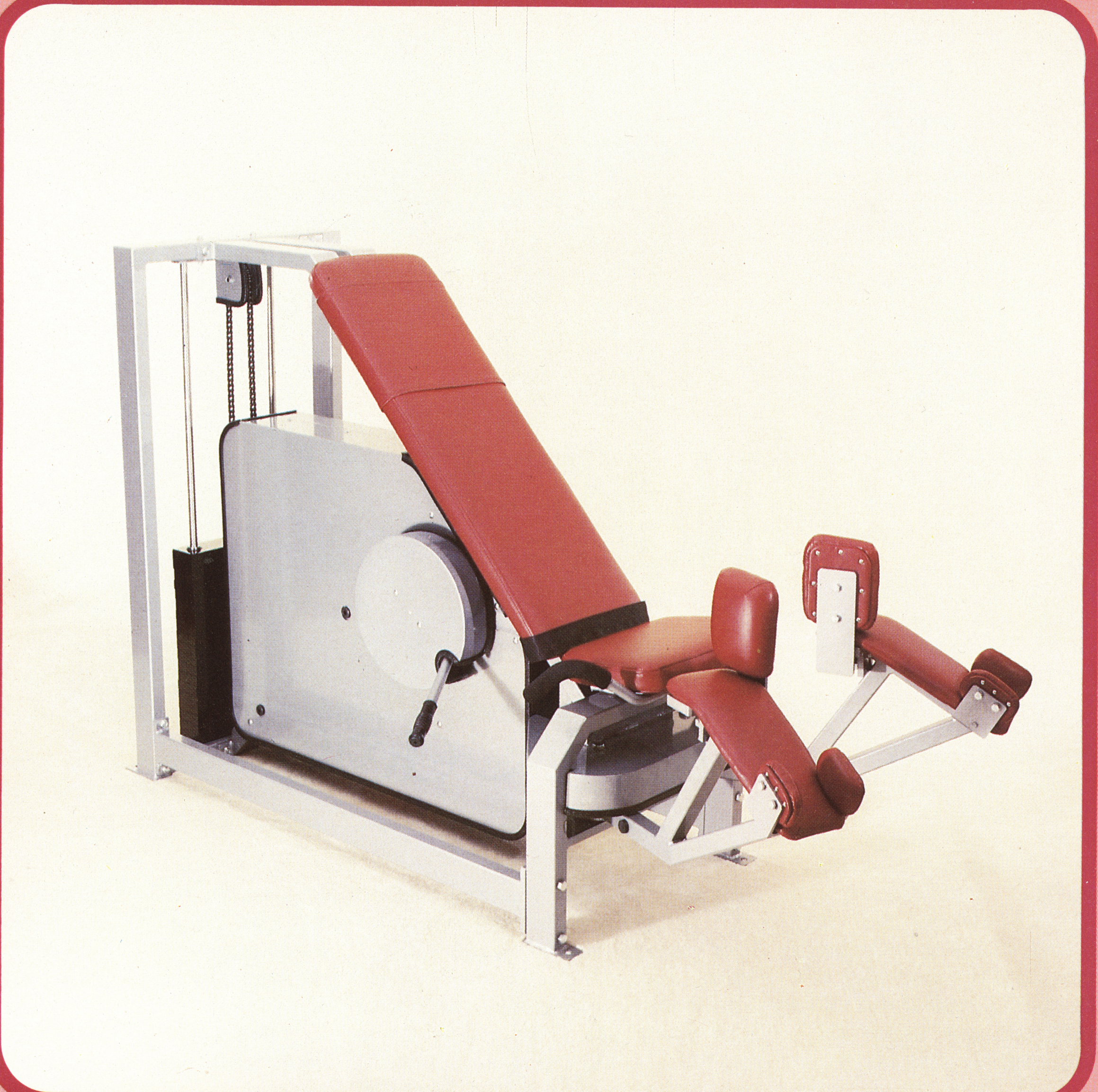
There is only a little change as the conversation gets into boxing and Brian talks with enthusiasm normal for his age, even though ''TKO'' and ''footwork'' are rare topics nowdays. (Brian's father Steve was a boxer, as was his father. Steve feels that boxing has gone through a period of being maligned and hopes to see it come back. Brian is all for it.) But even during conversation it is hard to envision Brian as a boxer. You tend to imagine slim youngsters with gloves too big, throwing random punches until a bell rings.

Then you see him cut loose on the big bag that easily outweighs him. When his first jab sends it flying, only to be hit again and again and kept dancing in the air from right-left combinations thrown from a tight guard, you realize that this is a **boxer.** The stuff is there, and it serves to amplify all impressions of the Colorado fitness scene. Brian concentrates on the bag (it has a face and body sketched on it). The boy disappears and is replaced with a determined individual, centered on his goal. He has six TKO's and one Knock Out in his 26-fight career and was 1979 South Dakota champ, 1980 Colorado Golden Gloves champ.

He might win the Olympics, he might not even get there, but he is involved in his sport. He is a boxer in the same spirit as J.D. is a pilot and Gary a climber. The Colorado fitness whirl seems contagious to all people. They're combining healthy minds and bodies to reach new heights of personal satisfaction and accomplishment.

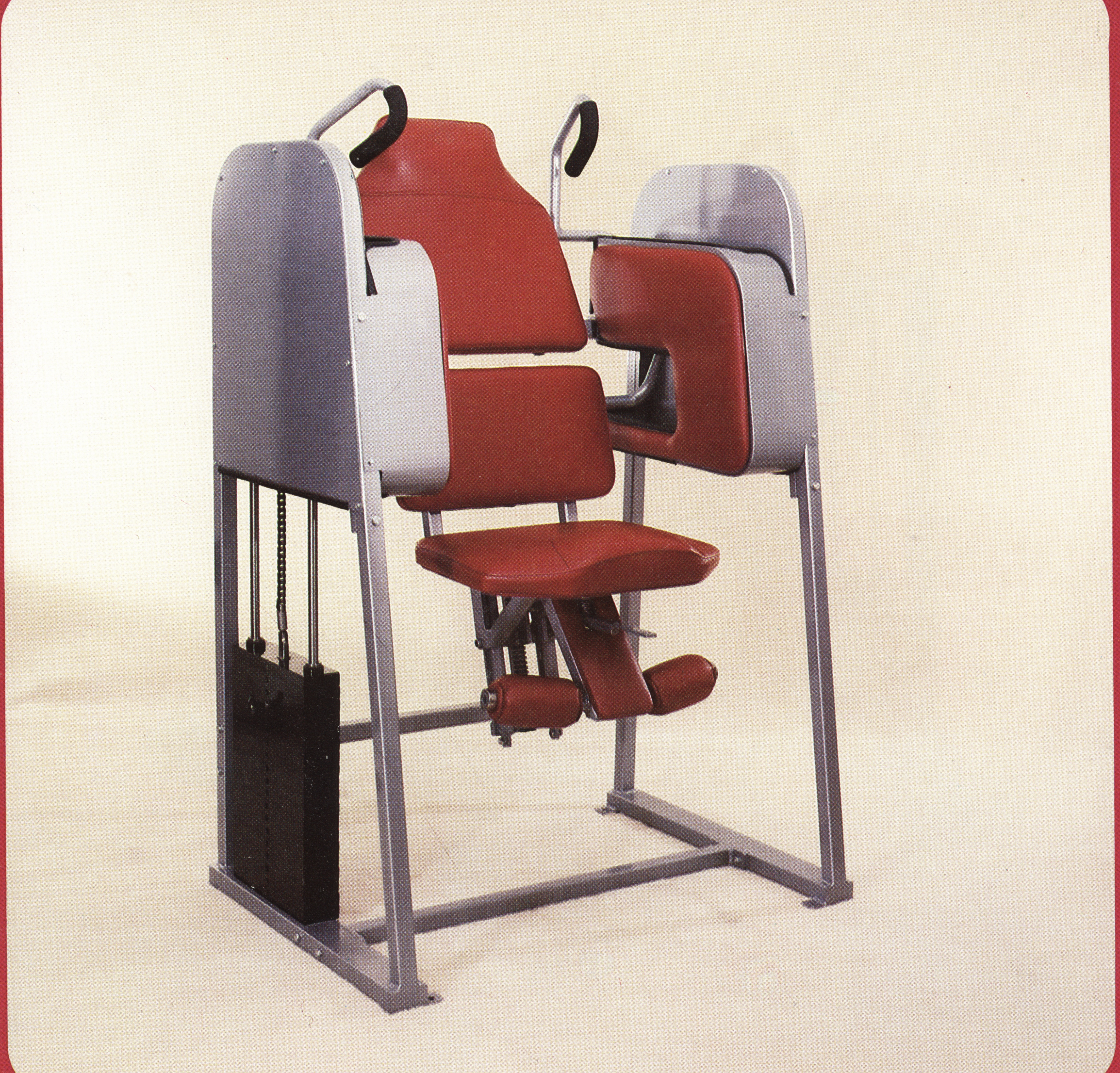
1980

Nautilus Showcase of New Machines



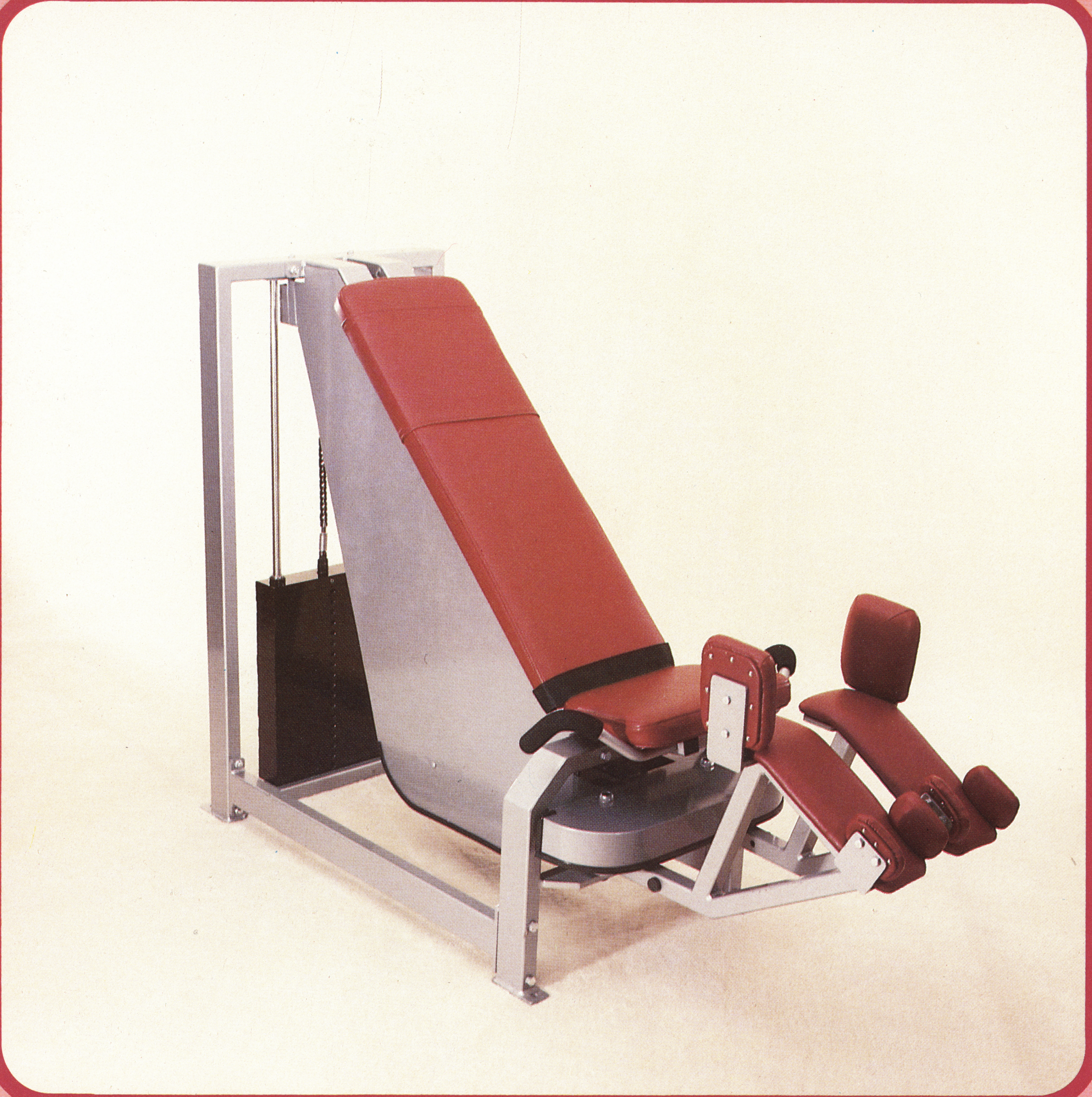
Compound Abduction–Adduction Machine

The first new machine of Nautilus' pace-setters for the 1980's, the Hip Abduction-Adduction Machine provides full range exercise for both the inner thighs and the outer hip and thigh muscles.



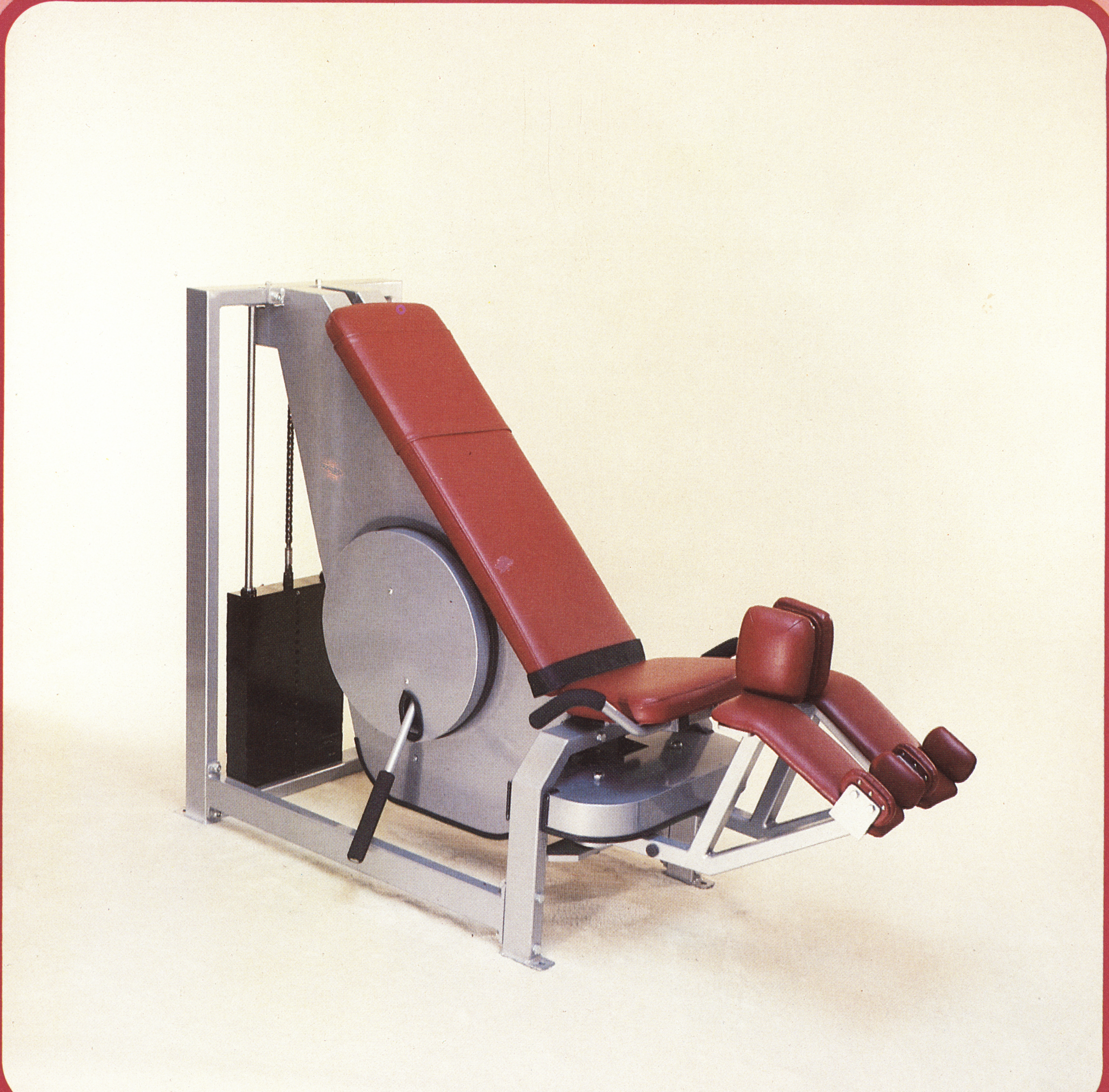
Abdominal Machine

Dozens of prototypes have been tested. Thousands of dollars have been spent. Finally, the piece of equipment that everyone has been waiting for, the Nautilus Abdominal Machine, is in production. It's the only machine on the market that provides full-range contraction of the abdominals, the most important muscles of the midsection and waist.



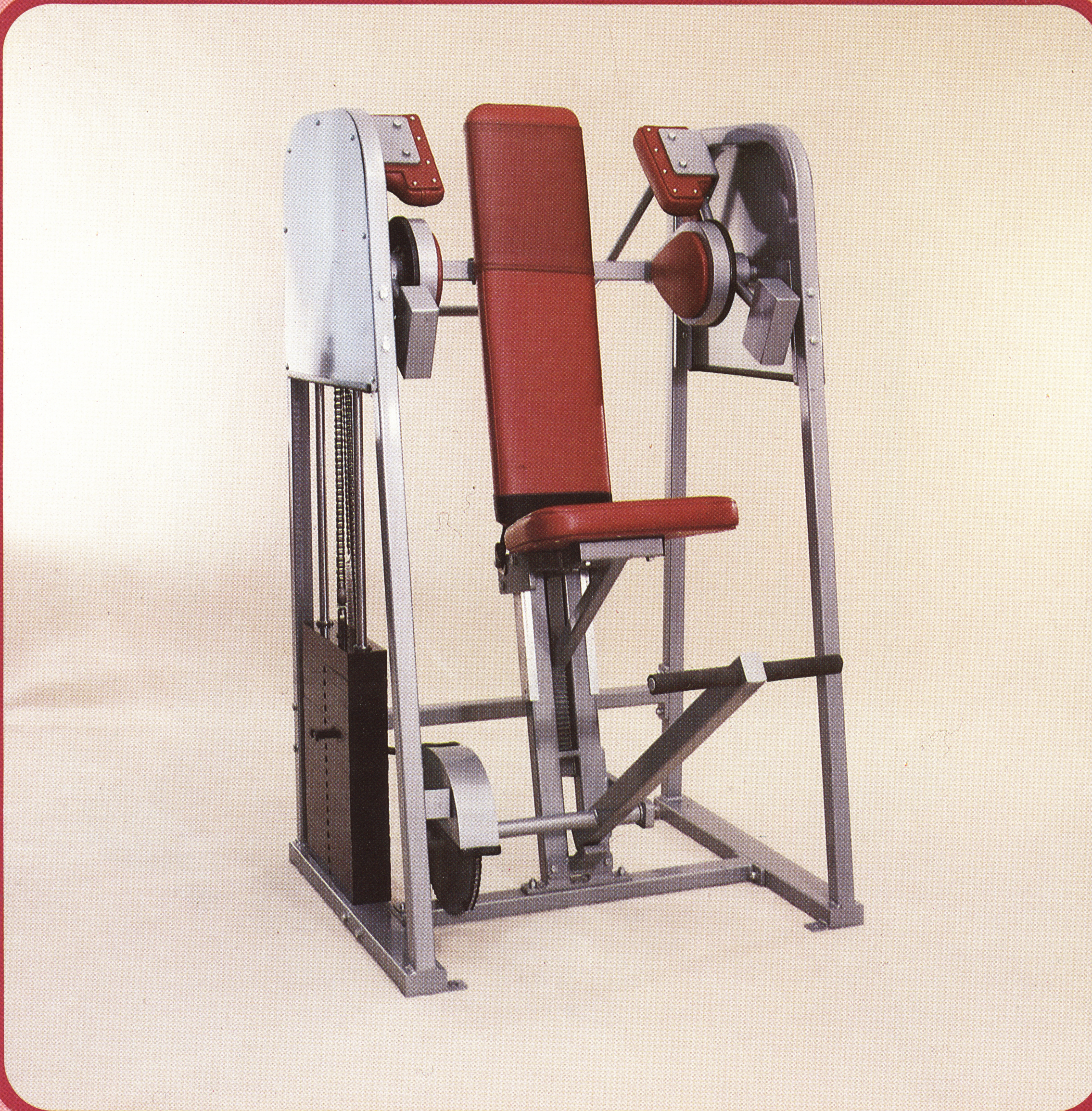
Single Station Abduction Machine

By popular demand the Hip Abduction-Adduction Machine has been separated into two stations. Having two stations will eliminate much of the waiting in line by trainees who performed both exercises on the same machine. The new Hip Abduction Machine provides full-range exercise for the outer hip and thigh muscles.



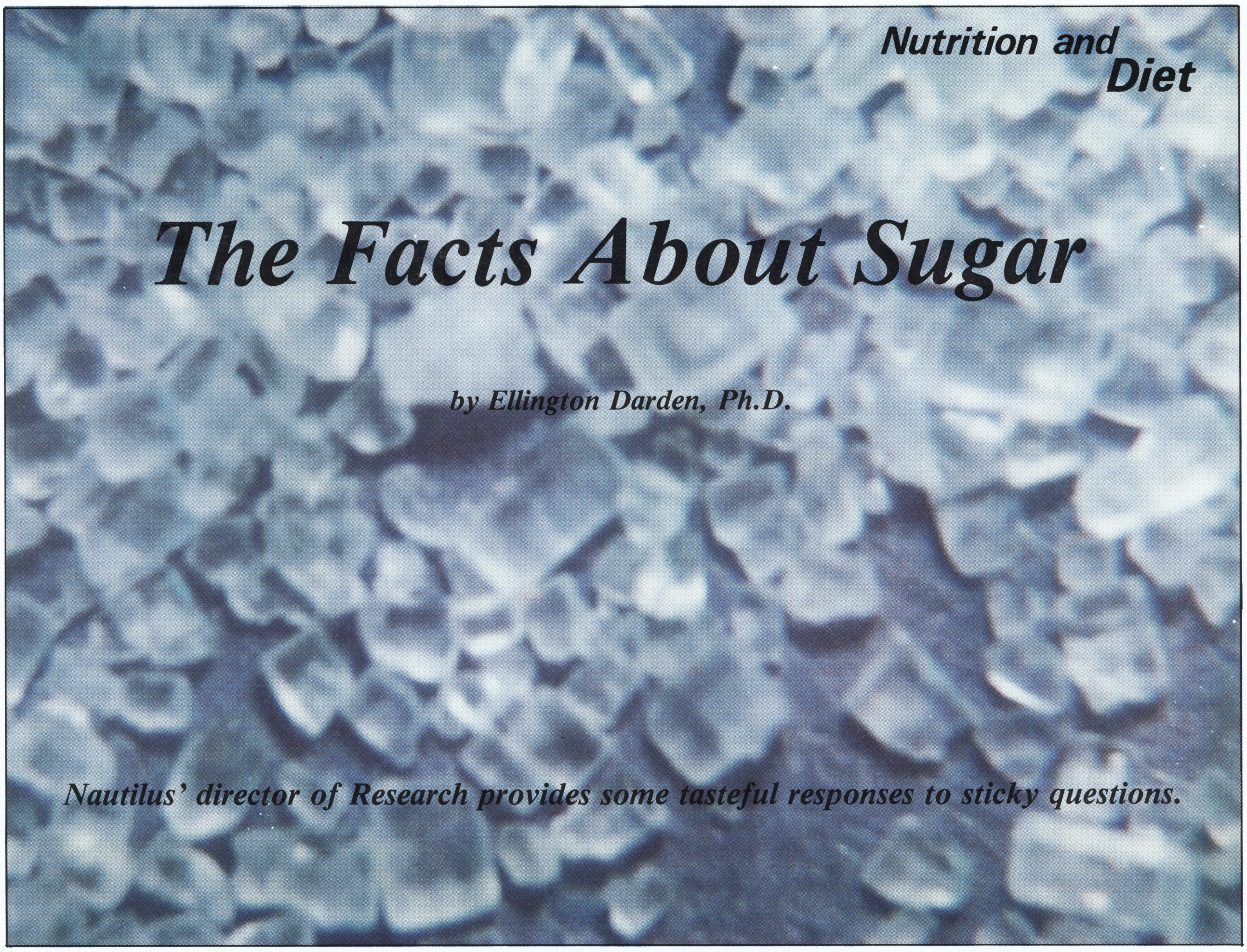
Single Station Adduction Machine

The Hip Adduction Machine is specifically designed to work the large muscles of the inner thighs. An adjustable lever on the right side of the machine allows the trainee to increase or decrease the machine's range of movement.



Women's Pullover Machine

Nautilus' best-selling Pullover Machine has been redesigned especially for a woman's torso. The seat is adjustable, the foot pedal allows easy getting in and getting out, and the weight stack has smaller increments — all necessary for the requirements of today's fitness-minded woman.



Nutrition and Diet

The Facts About Sugar

by Ellington Darden, Ph.D.

Nautilus' director of Research provides some tasteful responses to sticky questions.

photo courtesy of Savannah Sugar Refinery

Sugar! Some people claim it is addictive. Other people believe it poses a dire threat to our national health. Yet others say it is an important component of a balanced diet.

With so much talk about sugar, many fitness-minded people are confused. They have little idea about what the real facts are. Here are answers that will help to shed light in a factual manner on the actual role of sugar in health, nutrition, and performance.

What is sugar?

Sugars are the basic forms of carbohydrate. They are widespread in nature, occurring in fruits, vegetables, nectar, honey, blood, milk, and as building blocks of simple and complex organic molecules. The simple sugars, glucose and fructose, are found in virtually all plants, separately and in combination.

Our major source of sugar is sucrose. This is the familiar refined white sugar, obtained from cane or beets, which is commonly added to our food. Sucrose is formed when a molecule of glucose combines with a molecule of fructose.

Is there any truth to the idea that one sugar is somehow better than another?

A quick walk through a "health-food" store will convince almost anyone that white sugar is rated on par with DDT and arsenic. But that doesn't mean that sugar is eliminated in their products. The breads, for example, are chocked full of honey, brown sugar, or "raw" sugar. Just the white refined sugar is considered to be the villain.

Nutritionally, however, there is virtually no difference among the various types of sugars. To understand why, let's examine how sucrose is made.

In a typical manufacturing operation, sugar cane is shredded into small pieces, crushed, and the juice separated. Processing causes the sugar in the juice to crystallize, forming sugar crystals and syrup. These are separated by a mechanical device into raw sugar and molasses. A washing and filtering process soon turns the raw sugar into a refined white sugar.

Real raw sugar cannot be sold in the United States because it contains contaminants such as insect parts, soil, molds, bacteria, lint, and waxes. When it is partially refined to make it sanitary, it can be sold as "turbinado" sugar. Brown sugar consists of sugar crystals coated with some molasses syrup. Most manufacturers make it by spraying syrup onto refined white sugar.

Turbinado and brown sugar might look and smell more healthful than white sugar, but the few additional nutrients they contain are so minuscule in quantity that it makes no nutritional difference.

Honey is formed by an enzyme from nectar gathered by bees. Depending where the nectar comes from, honey can differ in composition and flavor. All honey is a blend of a number of different sugars, largely fructose and glucose. Like brown sugar, honey has a few

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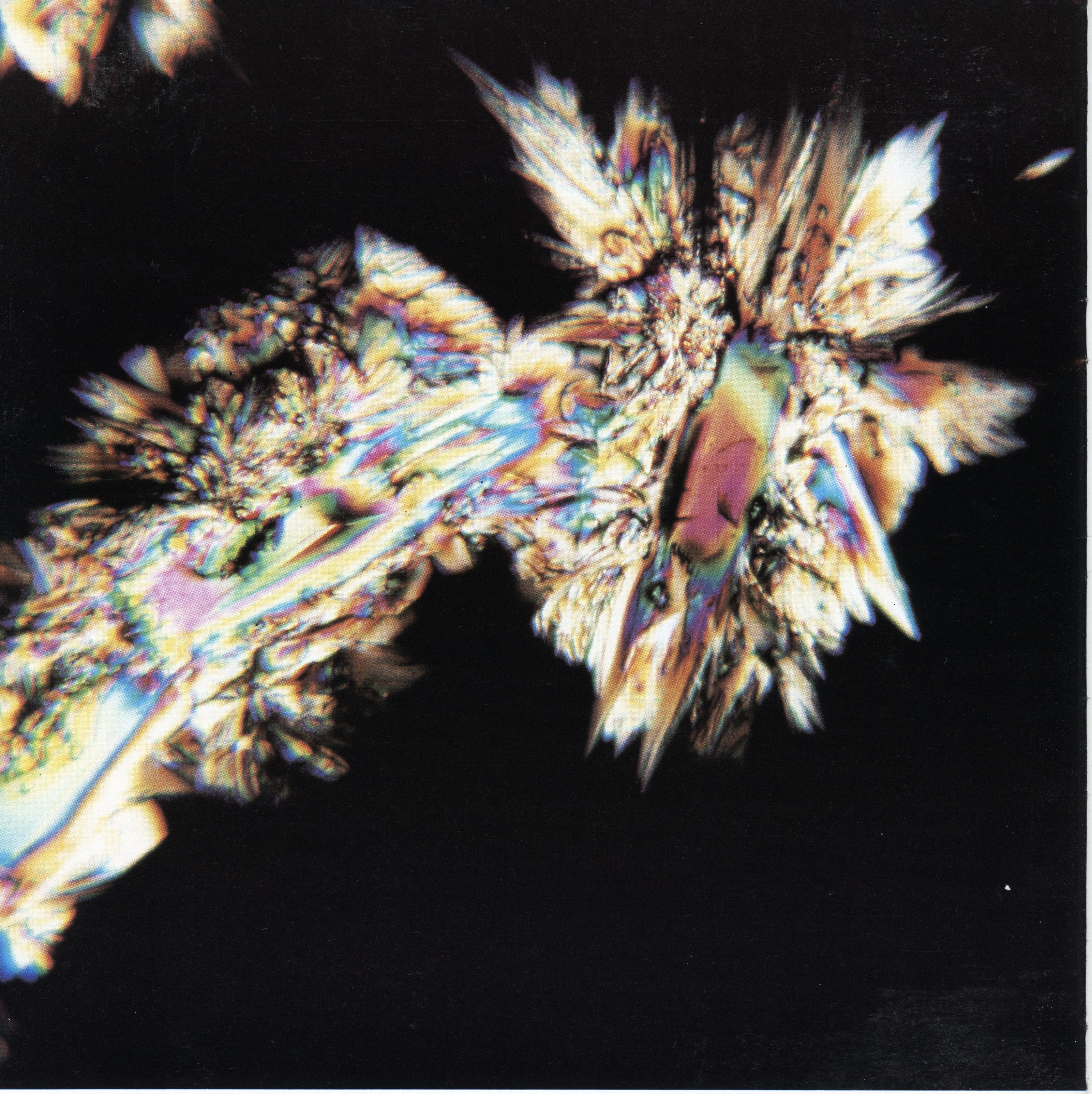


High power magnification of sugar crystals. Phillip A. Harrington — The Image Bank©

Continued . . .

nutrients, but again, they're scant. For example, a person would have to consume four pounds of honey to get his recommended daily requirements of calcium. And there's no evidence that honey is easier to digest than other sugars. When an individual eats table sugar, his body breaks the sucrose down into fructose and glucose, the two leading ingredients of honey.

Honey, "raw" sugar, brown sugar, and white sugar are all, basically, different forms of the same thing: *sugar*.

How much sugar does the average American eat?

Roughly 100 pounds of sugar are consumed each year by the average American. This amount has scarcely changed in the last 50 years. Claims that sugar consumption is rising in the United States are untrue. Industrial sugar use has grown, but direct consumption of sugar by the consumer has declined proportionately.

According to the U.S. Department of Agriculture, sugar and other sweeteners contribute about 16.4 percent of our total caloric intake per year. This amounts to about 12 percent for adults and 20 percent for teenagers.

Sugar consumption at the level of 15 to 20 percent of total calories is considered moderate. This level, in fact, was used by the Select Committee on Generally Recognized As Safe Substances in its recommendations to the Food and Drug Administration that sugar, as presently consumed in this country, is safe.

How does the United States sugar consumption compare with other countries?

As low-income countries experience economic growth, their rate of sugar consumption rises sharply. Evidently, sugar becomes affordable as a source of calories, it is desired because it adds taste, variety, and attractiveness to the diet. In developing countries the demand for sugar is expected to continue to rise.

By contrast, countries with high per-capita income, such as the United States, have experienced a leveling off of sugar consumption. This indicates a natural per-capita limitation to the amount of sugar consumed.

There are several countries in which sugar intake per person is higher than here in the United States. It should be noted that some of these countries are among those with the highest life expectancy figures in the world:

	lbs.		lbs.
New Zealand	*124*	*United States*	*99*
Israel	*124*	*Sweden*	*96*
Australia	*117*	*Iceland*	*95*
Denmark	*108*	*Finland*	*94*
United Kingdom	*104*	*Switzerland*	*90*
Netherlands	*101*	*Canada*	*90*
Ireland	*100*		

Should athletes eat sugar prior to competition for quick energy?

It is generally a misnomer to classify a food as producing quick energy. The only time sugar would serve as quick energy for athletes would be if it were consumed after a two-day fast. The body has sizable reserves of glycogen, approximately 1,500 to 2,000 calories, that supply energy for athletic performance. If an individual eats sugar before exercising, the sugar simply will be metabolized and moved into storage with his other fuel reserves. Furthermore, large amounts of sugar (several ounces of honey, for example) may cause extra distention in the stomach, and the evacuation mechanism may be impaired. Problems such as cramps, nausea, and diarrhea can result.

Do we eat too much sugar?

Cautioned since childhood against eating too many sweets, many of us continue to feel guilty about consuming sugar. The irrational feeling persists that a substance so pleasant to the taste cannot possibly be good for us. It is necessary, however, to understand that sugar is but one component of a complex dietary picture involving many nutrients.

Carbohydrates provide 45 to 50 percent of the total calories in the American diet today. Sugar and other sweeteners account for 16.4 percent of our total intake, with sucrose contributing 12 percent. Recent surveys indicate that we are receiving more than adequate amounts of protein, too much fat, too much alcohol, and not enough carbohydrate. Carbohydrates are the only source of available calories in which an increase in consumption is indicated. If Americans were to increase consumption of total carbohydrate, and per-capita sugar consumption remained constant, the percentage of total carbohydrate calories contributed by sugar would naturally decrease.

The most important fact to remember is that the Food and Drug Administration declares that sugar is safe at present levels of consumption.

What does sugar contribute to the diet?

Sugar is a source of carbohydrate: Sugar together with starch belongs to the group of nutrients called carbohydrates. Carbohydrates together with the remaining nutrient groups — proteins, fats, vitamins, minerals, and water — make up our food and drink.

Carbohydrates are the cheapest and most easily digested source of animal and human energy. Although fat and protein can replace carbohydrate as a provider of energy for most of the cells of the body, some carbohydrate is essential for humans. Carbohydrate from food is converted by the body primarily into the simple sugar, glucose. Brain, nerve, and lung tissue require glucose as their source of energy.

Nutritionists are in general agreement that 50 to 60 percent of our calories should come from carbohydrates. Sugar makes up approximately one-third of the U.S. carbohydrate intake. If one could eliminate sugar from the diet, or even cut it down, it would be difficult to find substitute sources of calories.

Sugar is a source of calories: Energy, as measured in calories, is the first need of the body. If a child gets adequate protein, but does not get sufficient calories, his body will simply burn much of that protein as fuel. The protein-sparing effect of sugar and other carbohydrates is an important consideration if the supply of protein is limited. The importance of sugar in providing an inexpensive, readily available source of calories cannot be underestimated.

Sugar makes foods palatable: It is no secret that the sweet taste of sugar is almost universally pleasing. What deserves emphasis is the contribution sugar's palatability makes to overall nutrition.

Scientists are just beginning to explore the importance of taste to nutrition. Pleasant taste stimuli, including the sweet taste, have been found to favorably affect the activity of the digestive system. The available evidence indicates that appealing flavor in food is particularly important for very young children. Newborn infants, in fact, exhibit a decided preference for sweetness, leading scientists to the conclusion that our own desire for sweets is inborn.

Obviously, no matter how nutritious a food is, it must be acceptable in order for people to eat it. Sugar can be an important factor in promoting the palatability of diets that provide a desirable distribution of calories from protein, fat, and carbohydrate. A moderate intake of sugar, then, is indispensable to good nutrition.

Sugar is an important ingredient in many processed foods: The variety of foods in which sugar serves as an ingredient is a reflection of the many functions it performs in addition to its sweetening effect. Sugar acts as a preservative in processed fruits, jams, and preserves. Used in small amounts, sugar has the ability to enhance the flavors of foods such as preserved meats. It is sugar that contributes necessary bulk and texture to ice cream, baked goods, and confec-

Continued

Sugar
Continued . . .

tionery. In bread, sugar contributes to crust color and flavor, and holds moisture in the product so that shelf life is extended.

It is sugar's versatility that makes it an indispensable ingredient in many of our most popular foods.

Are calories from sugar empty calories?

Since calories are a measure of heat and energy, it is technically meaningless to say they are empty. This term, however, is commonly applied to foods that contribute only calories as compared with foods that contribute other nutrients along with calories.

Refined sugar is a source of carbohydrate that has often been labeled "empty calories" because it contains no other nutrients. Fats and alcohol have also been so labeled.

Nutritionists fear that overconsumption of foods that supply calories but few nutrients dilute the diet and may result in nutritional deficiency. Fears that sugar has displaced other nutrients to the point of deficiency may be groundless. A recent study of nutrient intakes in the United States shows that our consumption of key vitamins and minerals has not decreased in this century.

Nutritionists caution us against overconsumption of calories, while recommending that we combine a variety of foods to achieve a balanced intake of nutrients. Sugar can help us with this task by rendering many nutritious foods palatable. Besides, most of us consume sugar in combination with other foods and not alone.

What effect does sugar have on the teeth?

It has been stated and restated that sugars cause dental caries. The danger in accepting such statements at face value, however, is that they encourage an oversimplified view of the problem of tooth decay and its possible solutions.

Tooth decay is a complex disease. Sugar consumption is one of the many factors involved in its etiology. Other factors include heredity, the shape, alignment, and hardness of the teeth, the presence or absence of certain trace nutrients in the diet, the chemistry of the saliva, and the presence of microorganisms in the mouth.

Research has shown that total sugar content of the diet is not as important as several more potent factors, such as the form of the food and the frequency with which it is consumed. Stickier foods are potentially more harmful than non-sticky foods. Frequent consumption of food between meals is more detrimental because total time of exposure is increased. There is less risk of increased caries when sugar is consumed with meals.

In view of these factors, the need for effective oral hygiene in controlling tooth-adhering plaque and bacteria becomes apparent.

We can practice good dental hygiene, including regular visits to the dentist. We can avoid sticky foods containing sugar, particularly between meals and at bedtime, and opt for sweets in liquid or quick-dissolving forms. But above all, we can add fluoride to school and community water supplies to harden young teeth early. It is estimated that for about 25 cents per person annually, community water supplies can be fluoridated and some 60 percent of dental decay can be eliminated.

Is there any relationship between sugar consumption and diabetes?

There has been no scientific evidence to show that sugar consumption is a specific cause of diabetes. Like all diseases, diabetes is multifactoral in origin. It would be extremely difficult to single out any one factor as its cause. Of the many factors that can increase risk of the disease, the most important seem to be obesity and genetic factors.

Can individuals become addicted to sugar?

Sugar addiction is a misleading phrase that has been popularly used to describe individuals who overindulge in sweets. There is no substantiated scientific evidence that sugar is addictive. Recent scientific research, in fact, demonstrates that our liking for sweets is predetermined by innate factors rather than external stimuli.

Scientists feel that over desire for sweets is probably the result of a basic biological drive. It is believed that this drive enables wild animals, including primitive man, to select safe foods such as fruits, while avoiding toxic substances that are bitter. Pleasure in eating is indispensable to good nutrition and sugar's sweet taste makes a significant contribution to the total diet.

Should an athlete's sugar intake be reduced if he is trying to lose 10 pounds of bodyweight?

The basic cause of overweight is an excess of calories, regardless of their source. Actually, ounce for ounce, sugar contributes fewer than half as many calories as fats. One gram of fat provides 9 calories and the same amount of sugar accounts for 4 calories.

To lose weight, emphasis should be placed on the total number of calories. The diet should also be balanced with respect to fat, protein, carbohydrate, and the necessary vitamins and minerals. This can be most readily achieved by judicious selection of foods, including sugar and starch, at breakfast, lunch, and dinner. Low-calorie regimens definitely can be made more pleasant through the inclusion of a moderate number of calories from sugar.

The facts about sugar . . .

- Sugar is a substance found naturally in a wide variety of plant foods. The body does not distinguish between sugar that comes from the sugar bowl and sugar that exists in fruits and vegetables.
- Sugar is a significant source of dietary carbohydrate. Carbohydrates are the body's primary energy source.
- Sugar's physical and chemical properties make it extremely useful in the preparation of a wide variety of foods by both the food industry and the household user.
- Sugar, in certain forms, contributes to the problem of dental caries. Sugar is only one of many factors that play a role in this disease.
- Sugar is safe. Its consumption is not related to any death-dealing disease.
- Sugar's sweet taste contributes to the pleasure of eating.

Hence, sugar is no better or worse than any other food. It is simply one component of a balanced diet. Sugar is certainly not taboo for fitness-minded people!

(Permission to reprint courtesy of Spray — The Water Skiing Magazine, Vol. 3, No. 7, Fall 1980).

by Ari Kiev, M.D.

Sustaining Motivation for Training

> *"If you can force your heart and nerve and sinew*
> *To serve your turn long after they are gone,*
> *And so hold on when there is nothing in you*
> *Except the Will which says to them: "Hold on!"*
>
> — *"If" by Rudyard Kipling*

While these words from Kipling's powerful poem certainly can inspire the "second effort" needed to win the second half of a championship game, it's unlikely that they will be sufficient in helping most people to sustain interest in conditioning and competitive programs over the long haul. What most of us need to do is to direct attention to more fundamental psychological skills which can improve motivation and the capacity to concentrate. Only this will improve performance, increase satisfaction with your efforts, and overcome the fears that inhibit all our effort.

Capacity to Concentrate

Whether it be a stationary bullseye, a moving ball, the rim of the basket, the bobsled track in front of you, or simply a basic set of exercises, more than any other mental mechanism, the capacity to concentrate or fix your visual and mental attention on a specific target is the single most critical mental skill needed for enhanced and sustained athletic effort.

The capacity to concentrate on the relevant tasks or target before you determines your level of performance. The more you can concentrate mental energy on the designated target, the less you'll be distracted by thoughts of failure, and the more you'll be able to build the confidence needed to take the calculated risks required for high achievement.

The more you can concentrate on the "target," the more energy and effort you will be able to inject into the task, the faster time will flow for you,

continued

It's fair to assume that most people don't concentrate as well as they can. This stems in part from anxiety which can generate a distracting preoccupation with failure, or excessive concern with the thoughts of others.

and the smoother your performance will be — assuming you have knowledge of the basic elements of the sport.

Now you may wonder what concentration has to do with motivation and how it will enable you to sustain interest in routine exercises or conditioning programs without becoming bored and apathetic. The answer quite simply is that the more focused you are on the immediate events before you, the less concerned you will be about judging yourself or your results and the less anxious and frightened you will be about extraneous events that may be happening around you (including what your opponent may be doing in competitive situations). By focusing on as many details as you can, such as the range and direction of your motions, and focusing on what you are feeling as you concentrate on the events, you automatically will increase your involvement in the activity and the amount of effort you give to the task.

You can also increase your natural interests in an activity by increasing the amount of information you are gathering or the number of things you are doing to make the task more interesting to yourself. *Interest sustains concentration.* To keep up active effort it is necessary to make the object of your concentration more interesting and more complex.

Elements of Concentration

By increasing your attention to events and diminishing your concern for results in the future, you will increase your immediate involvement in the activity and reduce any feelings of boredom.

The more comfortable you become with an activity, the more likely you are to be bored. Thus, boredom can even develop from over-involvement and excessive effort which result in peaking, causing a loss of interest unless the activity is made more challenging and the number of items to concentrate on is increased. Ideally, you want to maintain a balance between levels of anxiety (from too much challenge) and boredom (from too little challenge) by recognizing when you are losing interest and increasing the challenge of the task.

Distractions

As the quality improves, your performance may become automatic. Your concentration may drift off, your performance may decline, and your interest may disappear. You can increase the challenge of the tasks by increasing the work to be done, increasing the speed in which it may be done, or by adding competitive factors. Any of these will increase the extent of your concentration. Maximum interest in a task, whether it's a training program or actual competition, increases when you are motivated to concentrate, but neither too bored nor too overwhelmed by a task too challenging.

It's fair to assume that most people don't concentrate as well as they can. This stems in part from anxiety which can generate a distracting preoccupation with failure, or excessive concern with the thoughts of others. Both of these may throw off concentration and lead to error or at least a reduction in the quality of the performance. This decline in performance and satisfaction then feeds into subsequent efforts and operates like a self-fulfilling prophecy, where the expectation of failure leads the individual to quit before reaching his or her objective, or leads to the interpretation of all kinds of cues as evidence of the likelihood of failure.

Ideally you can develop the capacity to concentrate for longer periods of time by recognizing when you are phasing out or becoming bored. Once you recognize the need to change activities or shift the focus of your attention, you can focus on body movements and the movements of the athletic equipment you may be using, thereby creating new challenges to keep your interest levels up.

Inhibiting Fears

A word is in order about fears and fantasies that can inhibit you from going all out in your training or competition program. Perhaps the most common of such fears is that you are not in good physical condition; that your flexibility and strength is inadequate and that you may not be able to finish a workout or some competitive event because your "body will stop." Lack of preparation can reinforce such fears to such an extent that your body may not do what it has to do and may not be able to go ahead and function.

One athlete told me not too long ago: "In a way, fear of the race is probably one of the reasons why I still have these little globules of fat here, these globules sitting inside there. I've got about 15 pounds to lose. I've lost 10 pounds, and in order for me to be in my peak ability to carry that weight around the track in fluid drive, I should weigh in the 160s. I'm around 180 now. So I could lose the weight, but there are times in the day when I just eat and then afterwards I'll say 'Why did I do that?' Because probably I really don't believe. I really feel sure by the time October comes, if I'm not ready for this, I won't enter."

Fear of injury is another inhibiting factor which may discourage you from remaining involved in an athletic program. Such fears can even lead to injury when you are not prepared physically and emotionally for competition. You may be fearful of hurting yourself and become too tight. You may be impatient. If you're not releasing when you're ready, you will experience spasms and tear up some fibers. If you are able to relax and release your movements, you are going to be fine. Beyond this, if you have had an injury, you may be inhibited for fear it will happen again.

Fatigue

Fatigue causes errors, deterioration of concentration, and a reduction in the speed at which you can do a task. However, the more you condition yourself, the less this will affect you. Moreover, familiarity with fatigue will increase your capacity to tolerate more of it.

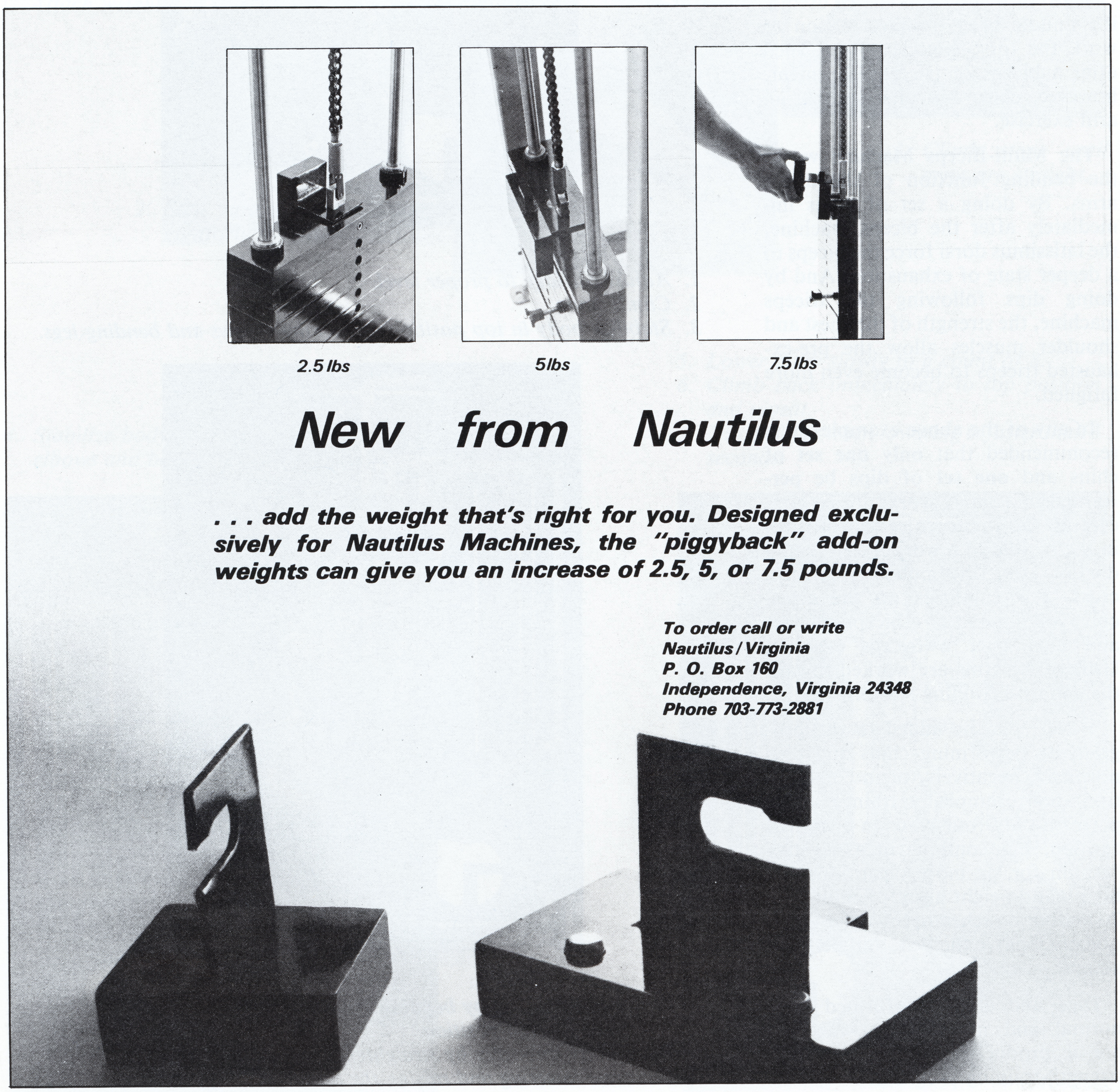
Continued

At the end stage of an effort, if you experience some pain, you have to decide whether continuing with the pain is worth the effort or whether you would prefer to quit, lose the pain, and feel like a loser. Inhibition and the use of antagonistic muscles which inhibit further effort increase in the state of fatigue or towards the end of an event when you are beginning to wonder whether it is worth the effort. Fatigue is an antagonistic stimulant (i.e. a stimulant of antagonistic muscles which inhibit effort) and occurs when nerve synapses are less excitable. This stimulant probably preserves the capacity to conserve energy.

It's therefore important to give some attention to controlling the fatigue factor in your workouts so as to keep up your long-term interest. Spread out tasks so that you don't become fatigued too much and so that your accomplishments can motivate you towards additional tasks. Take periodic rests and make periodic changes in your environment which can stimulate greater productivity, but remember your work-out environment should be structured for activity, not for comfort. It is useful to rest or nap prior to competition to diminish anxiety. Keep anxiety to minimal or optimal levels. *You can identify tension by increasing it until you feel discomfort, and then can consciously relax, and the tension will pass.*

Conclusion

To summarize, loss of interest in a conditioning program, no matter what your level of athletic accomplishment, is more likely to stem from psychological factors such as fear, fatigue, and boredom than from the program itself. The best approach to sustaining or reactivating interest and motivation and improving performance is to focus attention on developing your ability to concentrate. This more than any other single factor is the key to athletic and physical fitness success.



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(Continued from page 7)

marily works the latissimus dorsi muscles without involving the bending function of the arms. By performing chins immediately after pullovers, the strength of the biceps forces the pre-exhausted latissimus dorsi muscles to a deeper state of fatigue.

Dips can be performed immediately after the arm cross on the Double Chest Machine for a similar effect on the pectoral muscles. The arm cross isolates the pectorals without involving the triceps of the arms. By doing dips after the arm cross, the triceps force the pectorals to work even harder.

Thus, dips and chins can be used in the middle of a training session to work the torso muscles. Performed after a biceps or triceps movement, however, chins and dips become an arm exercise.

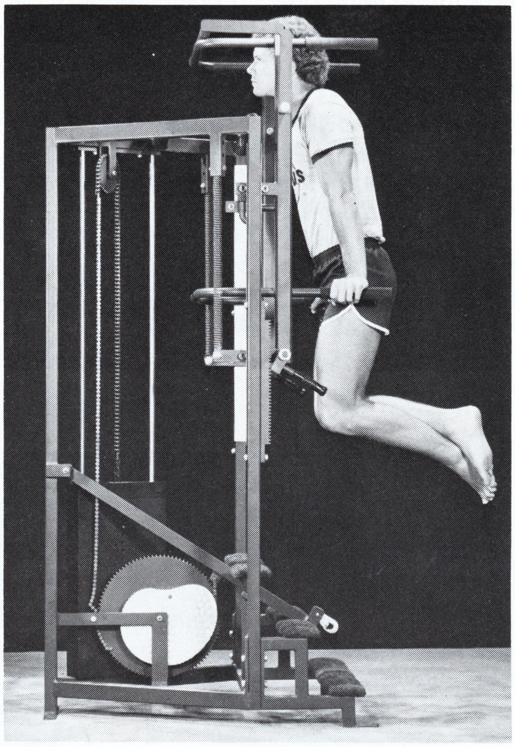
The Multi-Biceps Machine works the bending function of the upper arms. By doing a set of chins immediately after the biceps machine, the latissimus dorsi force the biceps to a deeper state of exhaustion. And by doing dips following the triceps machine, the strength of the chest and shoulder muscles allow the pre-exhausted triceps to become even more fatigued.

In any of the above examples, it is recommended that **only one set** of chins and **one set** of dips be performed in a single workout. To concentrate on the torso, perform them in the middle of a workout — immediately after the pullover or arm cross. For emphasis on the arms, chins are done after a biceps exercise and dips after a triceps exercise. Usually the arms are worked toward the end of a training session.

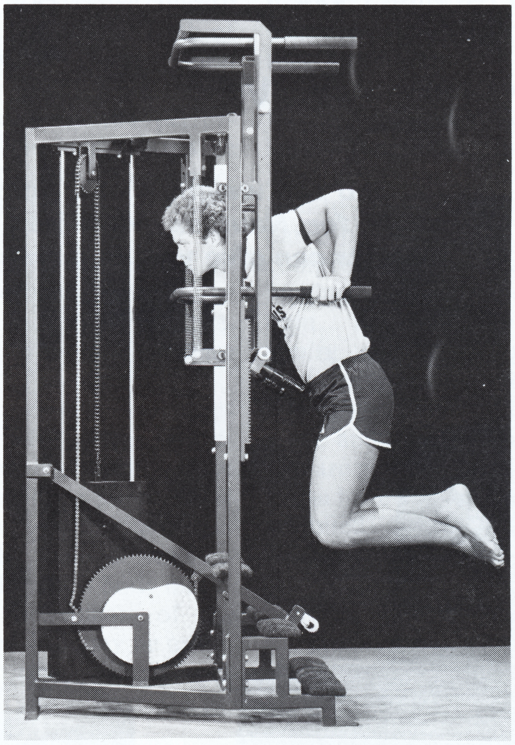
Variety can be added to the program by performing chins and dips normally, negatively, or in combination. For example, a trainee might perform only four chins in a normal fashion, but continue in a negative fashion for six more repetitions. Or he might do eight negative chins with 70 pounds attached to the weight belt, quickly remove the belt, and perform several more.

Dips and chins, performed in a normal and negative-only fashion, are a productive addition to any strength-training program.

Parallel Dip

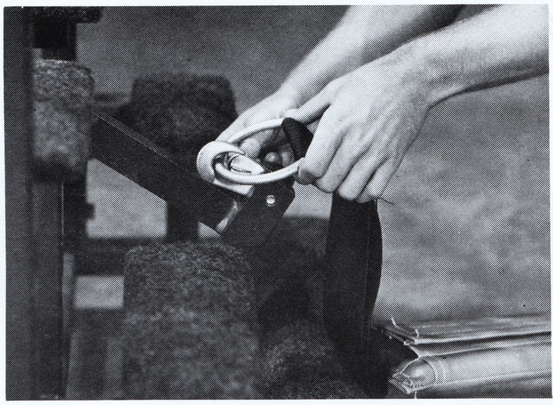


1. *Adjust carriage to proper level.*
2. *Climb stairs.*
3. *Stabilize body in top position by locking elbows and bending legs.*

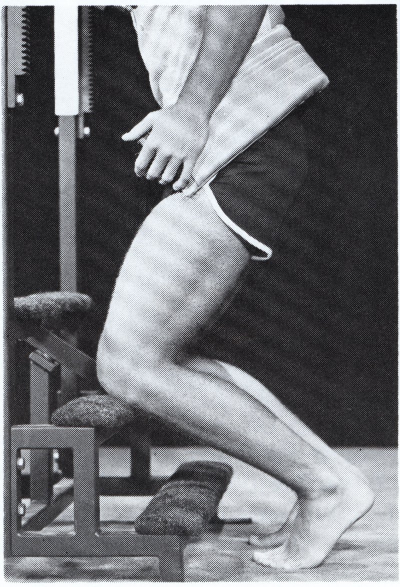


4. *Lower body slowly by bending arms.*
5. *Stretch at bottom position.*
6. *Raise body smoothly by straightening arms.*
7. *Continue lowering and raising the body until fatigued.*

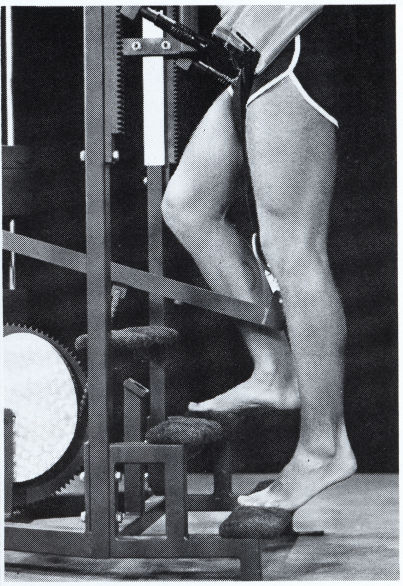
Parallel Dip (Negative only with weight belt)



1. Attach weight belt to movement arm.

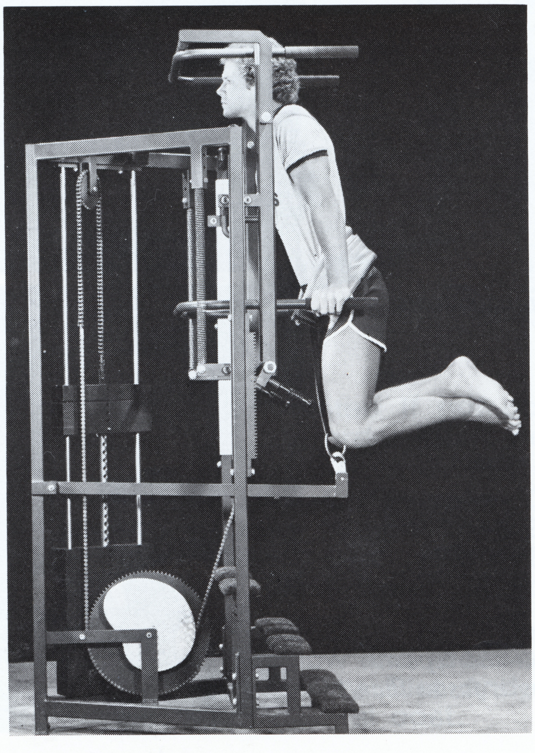


2. Step into belt and place comfortably around hips.

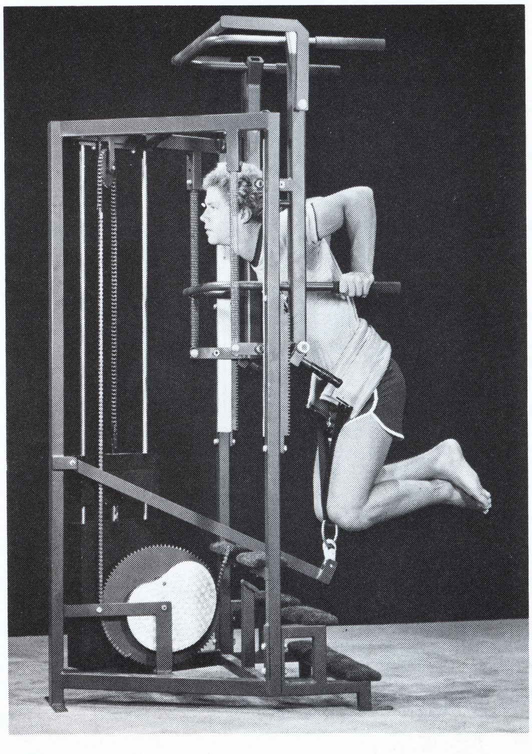


3. Climb steps until arms are straight.

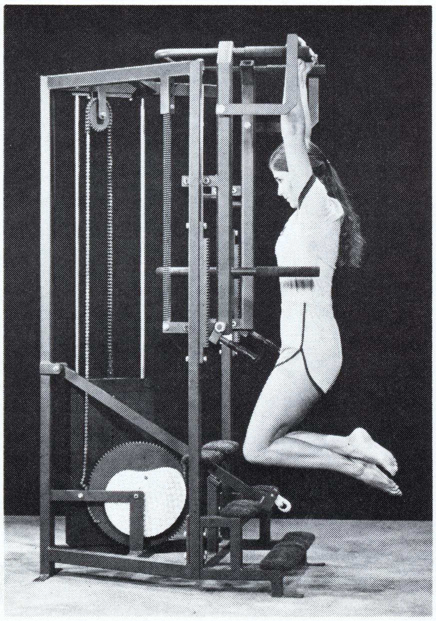
4. Stabilize body in top position by locking elbows and bending legs.



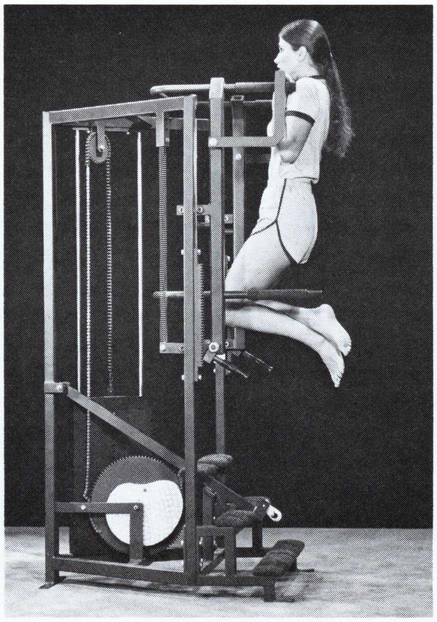
5. Lower body slowly to a count of 8.
6. Climb back immediately to top position and repeat.
7. Discontinue when lowering is faster than 3 seconds.



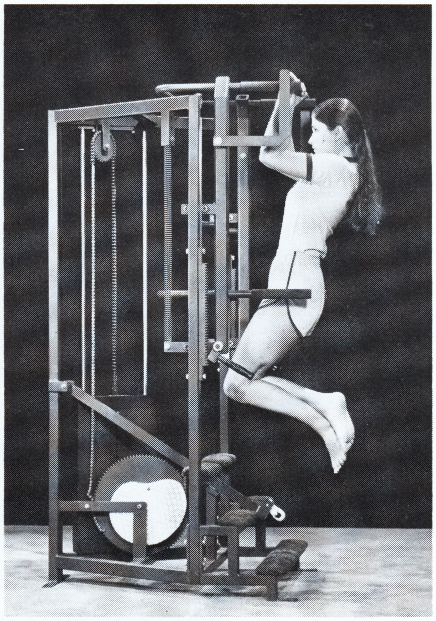
Chin



1. *Place cross bar in forward position.*
2. *Grasp cross bar with palms up.*
3. *Hang with arms straight and legs bent.*

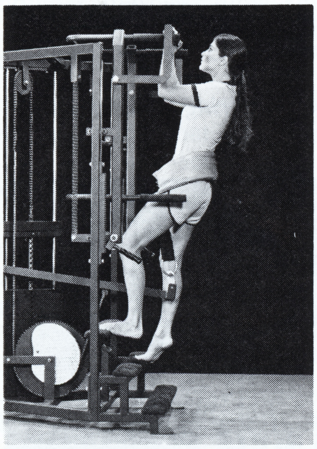


4. *Pull body smoothly up to cross bar.*
5. *Pause in top position with chin over bar and elbows by sides.*

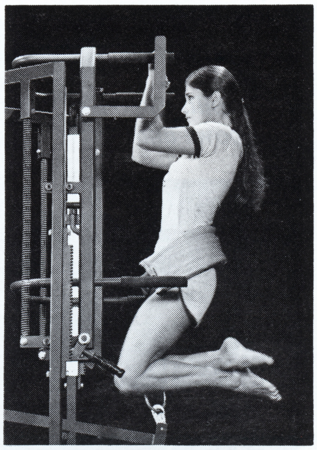


6. *Lower body slowly to hanging position and repeat.*

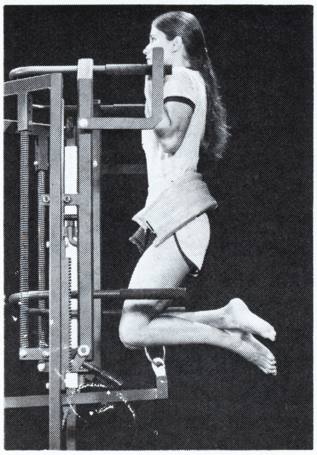
Chin (Negative only with weight belt)



1. *Attach weight belt to movement arm.*
2. *Step into belt and place comfortably around hips.*
3. *Climb steps until chin is over bar.*

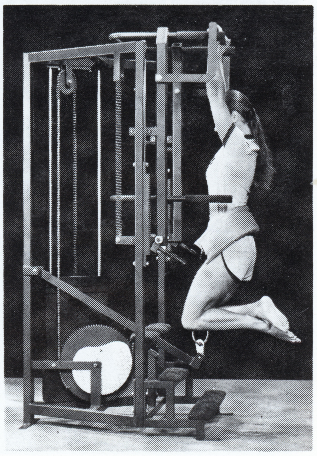


5. *Lower body slowly to the count of 8.*



4. *Stabilize body in top position by keeping elbows close to sides and bending legs.*

6. *Hang briefly in bottom position.*
7. *Climb back to top position and repeat.*
8. *Discontinue when lowering is faster than 3 seconds.*



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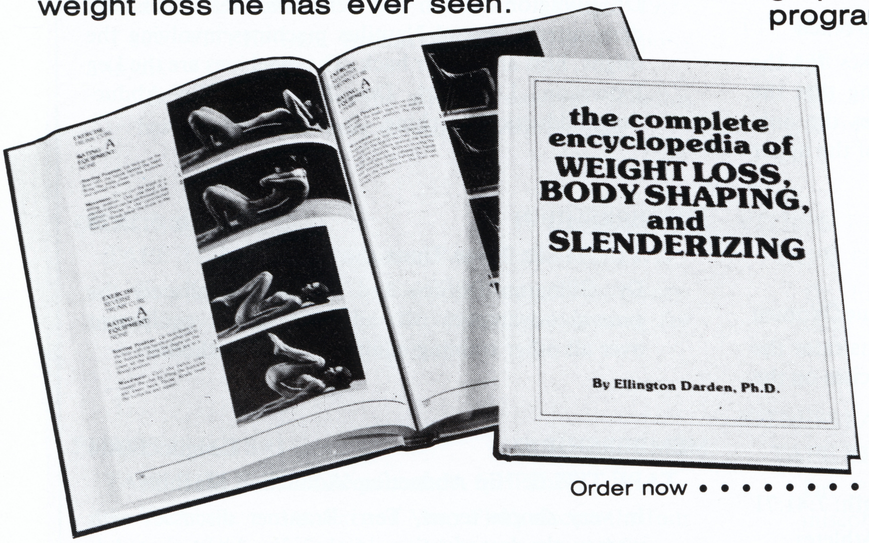
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Nautilus Tapes Now Available

LEG #1 Length: 5:42:1

TAPE TITLE: DIOsymmetric/POLYcontractile Hip and Back

Demonstrated by Terri Brantner, emphasis is placed on the only machine which provides full range exercise for the hips and upper body. Format is "woman to woman."

LEG #2 Length: 3:28:6

TAPE TITLE: Leg Extension Machine

Demonstrated by Terri Brantner: Terri explains the value of the Leg Extension Machine in dealing with women's problems with the upper thigh.

LEG #4 Length: 3:45:0

TAPE TITLE: Leg Curl Machine

Terri Brantner discusses with women the value of the Leg Curl Machine in improving the figure.

TORSO #2

TAPE TITLE: Pullover Torso Machine for Women

Terri Brantner compares different exercises for the arms and torso for women, demonstrating that the Nautilus Pullover Torso Machine provides the only full range exercise for the largest muscles of the upper body.

TORSO #10

TAPE TITLE: Nautilus Multi Exercise Machine/Women

Ron Hill narrates and Mary Pluth demonstrates the proper way for women to do different exercises on the Multi Exercise Machine.

TORSO #11 Length: 7:41:71

TAPE TITLE: Pullover Torso Machine for Athletes

Dick Butkus demonstrates the use of the Nautilus Super Pullover Machine. The narrative is aimed specifically (but not solely) toward athletes.

TORSO #12

TAPE TITLE: Nautilus Multi Exercise Machine/Men

Ron Hill narrates and Mary Pluth demonstrates the proper form for different exercises on the Multi Exercise Machine.

ARM #2

TAPE TITLE: Nautilus Multi Bicep Machine

Dr. Ellington Darden and Mary Pluth demonstrate the proper execution of bicep exercises.

ARM #3

TAPE TITLE: Nautilus Multi Tricep Machine

Dr. Ellington Darden and Mary Pluth demonstrate proper form in tricep exercises.

FIGURE CONTROL #1 Length: 6:30:4

TAPE TITLE: Improving the Bustline

Terri Brantner discusses with women how to improve the most distinctive feature of the female figure, the bustline.

FIGURE CONTROL #2 Length: 13:33:4

TAPE TITLE: Figure Control for the Hips and Upper Thighs

Dr. Ellington Darden and Terri Brantner discuss and demonstrate several Nautilus machines involving the thighs, hips and upper back. The machines are the Leg Extension, Leg Curl, Duo Hip, and Hip Abduction/Adduction Machine.

MEMBERSHIP #1 Length: 5:55:28

TAPE TITLE: Three Times the Results

Dr. Ellington Darden and Mary Pluth discuss the general advantages offered by Nautilus equipment over all other training equipment and methods.

MEMBERSHIP #2 Length: 5:04:4

TAPE TITLE: Hip Abduction/Adduction Machine

In very simple terms, Terri Brantner discusses with women the introduction of the Hip Abduction/Adduction Machine as part of the answer for the figure problems of women.

MEMBERSHIP #3 Length: 3:38:51

TAPE TITLE: It Works

David Liskin discusses the rise in popularity of achieving fitness and why Nautilus is the best way of attaining peak conditioning.

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MEMBERSHIP #4 Length: 7:52

TAPE TITLE: Using the Video Advantage

David Liskin discusses how to use the varying video systems to their fullest potential.

MEMBERSHIP #5 Length: 2:56

TAPE TITLE: Nautilus for Active Women

Mary Pluth discusses the role Nautilus training plays in helping women keep up with strenuous daily activities.

NAUTILUS STORY #2 Length: 5:01

TAPE TITLE: Nautilus, the Future and You

Ron Hill narrates a broad overview of Nautilus Sports/Medical Industries — where it is, and where it's going.

SPORTS MEDICINE #1 Length: 19:55

TAPE TITLE: Dick Butkus — Prevention of Sports Injury

Dick Butkus reviews the different exercises Nautilus has developed in order to help prevent injuries.

SPORTS MEDICINE #2 Length: 9:10

TAPE TITLE: Rehabilitation of an Injured Athlete

Eric Soderholm and Dr. James D. Key tell Eric's story. The story shows a successful Nautilus approach for rehabilitation of injured athletes.

FITNESS FACTS #1 Length: 6:11:94

TAPE TITLE: Four Requirements for Fitness

Dr. Ellington Darden and Mary Pluth discuss the four basic "Building Blocks" which constitute good fitness.

FITNESS FACTS #2 Length: 6:14:32

TAPE TITLE: What is Fat?

Dr. Ellington Darden and Mary Pluth discuss the composition of fat and its relationship to the human body.

FITNESS FACTS #3 Length: 7:29:61

TAPE TITLE: How to Measure Body Fat

Dr. Ellington Darden and Mary Pluth discuss the advantages and disadvantages of the most commonly used methods for the measuring of fat on the human body.

FITNESS FACTS #4 Length: 6:25:42

TAPE TITLE: Losing Body Fat

Dr. Ellington Darden and Mary Pluth discuss the realities of losing unwanted fat.

FITNESS FACTS #5 Length: 9:08

TAPE TITLE: Nautilus: The Golden Years

Ms. Ilanon Moon and Dr. Ellington Darden discuss exercise and diet for the elderly.

FITNESS FACTS #6 Length: 3:29

TAPE TITLE: Running: Prevention of Injury

David Liskin discusses the runner's need for Nautilus strength training in the prevention of injuries.

FITNESS FACTS #7 Length: Part I — 17:44

TAPE TITLE: Nutrition for the Active Lifestyles

Dr. Ellington Darden discusses common misconceptions and myths concerning diet and nutrition.

FITNESS FACTS #8 Length: Part II — 13:12

TAPE TITLE: Nutrition for the Active Lifestyles

Dr. Ellington Darden discusses additional common misconceptions and myths concerning diet and nutrition.

FITNESS FACTS #9 Length: 16:39:04

TAPE TITLE: Nautilus: A Complete Workout

Ron Hill narrates a complete physical workout using Nautilus machines. Proper use and ordinality of machines is shown.

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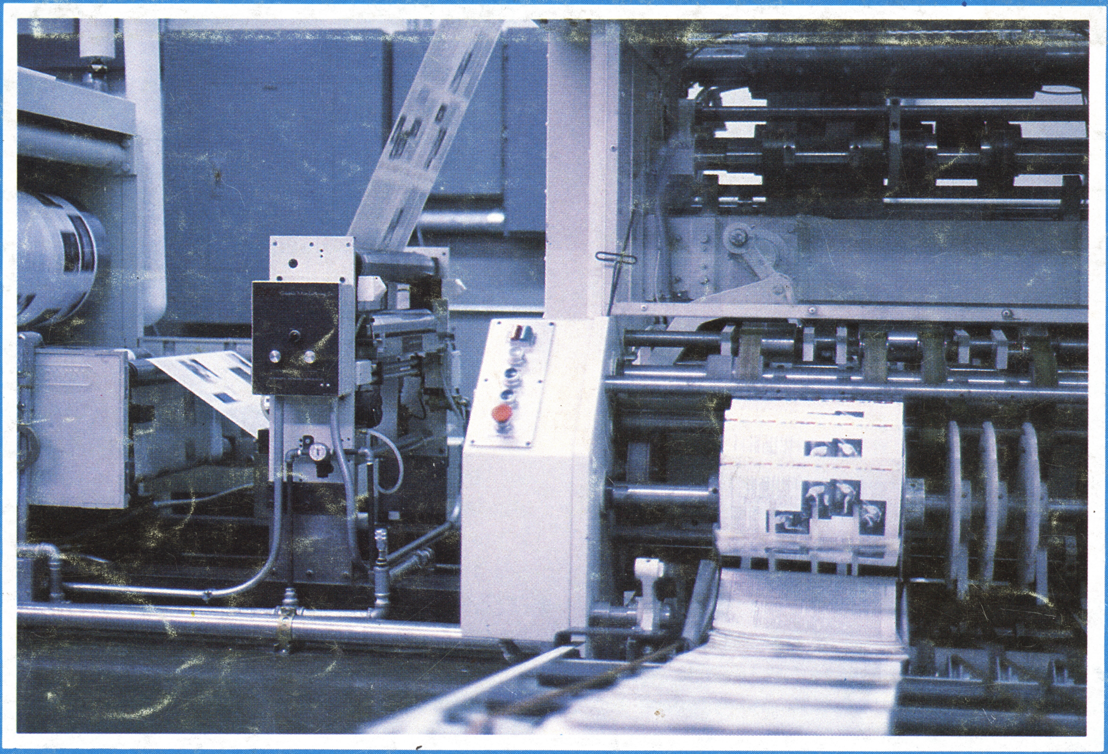

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